Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2.

	0_1	3_1	4_1	5_1	5_2	6_1	6_2	6_3	$3_1 \# 3_1$	$3_1 \# 3_1^*$	7_1	7_2	7_3	7_4
3_1	1	0	2	1	1	2	1	1	1	1	2	2	3	2-3
3_1^*	1	2	2	3	2	2	2	1	3	1	4	2	2	1
4_1	1	2	0	2-3	2	1	1	2	2-3	2-3	3-4	2	2-3	2-3
5_1	2	1	2-3	0	**1**	2-3	2	2	2	2	1	2	4	3-4
5_1^*	2	3	2-3	4	3	2-3	3	2	4	2	5	3	1	2
5_2	1	1	2	**1**	0	2	2	2	2	2	2	1	3	2-3
5_2^*	1	2	2	3	2	2	2	2	3	2	4	2	1	1
6_1	1	2	1	2-3	2	0	**1**	2	2-3	1-3	3-4	2	2-3	2-3
6_1^*	1	2	1	2-3	2	**1**	2	2	2-3	1-3	3-4	2	2-3	2-3
6_2	1	1	1	2	2	**1**	0	2	2	2	2-3	2	3	2-3
6_2^*	1	2	1	3	2	2	2	2	3	2	4	2	2-3	2
6_3	1	1	2	2	2	2	2	0	2	2	3	2	2-3	2
$3_1 \# 3_1$	2	1	2-3	2	2	2-3	2	2	0	2	2-3	2-3	4	3-4
$3_1^* \# 3_1^*$	2	3	2-3	4	3	2-3	3	2	4	2	5	3	2-3	2
$3_1 \# 3_1^*$	2	1	2-3	2	2	1-3	2	2	2	0	3	2-3	2-3	2
7_1	3	2	3-4	1	2	3-4	2-3	3	2-3	3	0	2	5	4-5
7_1^*	3	4	3-4	5	4	3-4	4	3	5	3	6	4	**1**	**2**
7_2	1	2	2	2	1	2	2	2	2-3	2-3	2	0	3	2-3
7_2^*	1	2	2	3	2	2	2	2	3	2-3	4	2	**1**	2
7_3	2	3	2-3	4	3	2-3	3	2-3	4	2-3	5	3	0	**1**
7_3^*	2	2	2-3	1	1	2-3	2-3	2-3	2-3	2-3	**1**	**1**	4	3-4
7_4	2	2-3	2-3	3-4	2-3	2-3	2-3	2	3-4	2	4-5	2-3	**1**	0
7_4^*	2	1	2-3	2	1	2-3	2	2	2	2	**2**	2	3-4	2-4
7_5	2	1	2-3	1	1	2-3	2	2	2	2	**1**	**1**	4	3-4
7_5^*	2	3	2-3	4	3	2-3	3	2	4	2	5	3	2	2
7_6	1	1	1	2	1	2	2	2	2	2	2-3	**1**	3	2-3
7_6^*	1	2	1	3	2	2	2	2	3	2	4	2	2	2
7_7	1	2	1	2-3	2	2	2	2	2-3	1-2	3-4	2	2-3	2
7_7^*	1	1	1	2	2	2	2	2	2	1-2	3	2	2-3	2-3
$3_1 \# 4_1$	2	1	1	1-2	1-2	2	2	2	2	2	2-3	2-3	3-4	2-4
$3_1^* \# 4_1$	2	2-3	1	3-4	2-3	2	2	2	3-4	2	4-5	2-3	1-3	1-2
8_1	1	2	2	2-3	2	1	2	2	2-3	2-3	3-4	2	2-3	2-3
8_1^*	1	2	2	2-3	2	2	2	2	2-3	2-3	3-4	2	2-3	2-3
8_2	2	1	2	1	2	2	1	2	2	2	2	2-3	4	3-4
8_2^*	2	3	2	4	3	2-3	3	2	4	2	5	3	2	2
8_3	2	2-3	2	2-4	2-3	1	2	2-3	2-4	2-4	3-5	2-3	2-4	2-4
8_4	2	2	1	2-3	2-3	2	1	2-3	2-3	2-3	2-4	2-3	3-4	2-4
8_4^*	2	2-3	1	3-4	2-3	1	2	2-3	3-4	2-3	4-5	2-3	2-4	2-3
8_5	2	3	2	4	3	2-3	3	2-3	4	2-3	5	3	1-4	2-3
8_5^*	2	1-2	2	2-3	1-3	**2**	1	2-3	1	2-3	1-4	1-3	4	3-4
8_6	2	1	2	2	2	1	1	2	2	2	2-3	2-3	3-4	2-4
8_6^*	2	2-3	2	3-4	2-3	2	2-3	2	3-4	2	4-5	2-3	2-3	2
8_7	1	2	2	3	2	2	2	1	3	2	4	2	2	2
8_7^*	1	1	2	1	2	2	2	1	2	2	2	2	3	2-3
8_8	2	1	2-3	2	2	2-3	2	1	2	2	3	2-3	2	2
8_8^*	2	1	2-3	2	1	2-3	2	1	2	2	3	2	2-3	2
8_9	1	2	2	2-3	2	2	1	2	2-3	2-3	3-4	2	2-3	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	7_5	7_6	7_7	$3_1 \# 4_1$	8_1	8_2	8_3	8_4	8_5	8_6	8_7	8_8	8_9	8_{10}	8_{11}
3_1	1	1	2	1	2	1	2-3	2	3	1	2	1	2	2	2
3_1^*	3	2	1	2-3	2	3	2-3	2-3	1-2	2-3	1	1	2	1-2	2
4_1	2-3	1	1	1	2	2	2	1	2	2	2	2-3	2	2-3	2
5_1	1	2	2-3	1-2	2-3	1	2-4	2-3	4	2	3	2	2-3	3	**2**
5_1^*	4	3	2	3-4	2-3	4	2-4	3-4	2-3	3-4	1	2	2-3	1	3
5_2	1	1	2	1-2	2	2	2-3	2-3	3	2	2	2	2	2-3	1
5_2^*	3	2	2	2-3	2	3	2-3	2-3	1-3	2-3	2	1	2	1	2
6_1	2-3	2	2	2	1	2	1	2	2-3	1	2	2-3	2	1-3	1
6_1^*	2-3	2	2	2	2	2-3	1	1	**2**	2	2	2-3	2	1-3	2
6_2	2	2	2	2	2	1	2	1	3	1	2	2	1	2-3	1
6_2^*	3	2	2	2	2	3	2	2	1	2-3	2	2	1	1-3	2
6_3	2	2	2	2	2	2	2-3	2-3	2-3	2	1	1	2	1	2
$3_1 \# 3_1$	2	2	2-3	2	2-3	2	2-4	2-3	4	2	3	2	2-3	3	1-3
$3_1^* \# 3_1^*$	4	3	2	3-4	2-3	4	2-4	3-4	1	3-4	2	2	2-3	1-3	3
$3_1 \# 3_1^*$	2	2	1-2	2	2-3	2	2-4	2-3	2-3	2	2	2	2-3	1	1-3
7_1	**1**	2-3	3-4	2-3	3-4	2	3-5	2-4	5	2-3	4	3	3-4	4	2-3
7_1^*	5	4	3	4-5	3-4	5	3-5	4-5	1-4	4-5	2	3	3-4	2	4
7_2	**1**	**1**	2	2-3	2	2-3	2-3	2-3	3	2-3	2	2-3	2	2-3	2
7_2^*	3	2	2	2-3	2	3	2-3	2-3	1-3	2-3	2	2	2	1-2	2
7_3	4	3	2-3	3-4	2-3	4	2-4	3-4	1-4	3-4	2	2	2-3	2	3
7_3^*	2	2	2-3	1-3	2-3	2	2-4	2-4	4	2-3	3	2-3	2-3	3-4	2
7_4	3-4	2-3	2	2-4	2-3	3-4	2-4	2-4	2-3	2-4	2	2	2-3	1-2	2-3
7_4^*	2	2	2-3	1-2	2-3	2	2-4	2-3	3-4	2	2-3	2	2-3	2-3	2
7_5	0	2	2-3	2	2-3	2	2-4	2-3	4	2	3	2	2-3	3	2
7_5^*	4	3	2	3-4	2-3	4	2-4	3-4	2-3	3-4	2	2	2-3	1-2	3
7_6	2	0	2	2	2	2	2-3	2	3	2	2	2	2	2-3	2
7_6^*	3	2	2	2	2	3	2-3	2	1-3	2-3	2	2	2	1-2	2
7_7	2-3	2	0	2	2	2-3	2-3	2	2-3	2-3	2	2	2	1-3	2
7_7^*	2	2	2	2	2	2	2-3	2	2-3	2	2	2	2	1-3	2
$3_1 \# 4_1$	2	2	2	0	2-3	2	1-3	2	3	1-2	2-3	2	2-3	2-3	2-3
$3_1^* \# 4_1$	3-4	2	2	2	2-3	3	1-3	2	2-3	2-3	1-2	2	2-3	1-3	2-3
8_1	2-3	2	2	2-3	0	**2**	**1**	**2**	2-3	**1**	2	2-3	2	1-3	**1**
8_1^*	2-3	2	2	2-3	2	2-3	**1**	2	2-3	2-3	2	2-3	2	1-3	2
8_2	2	2	2-3	2	**2**	0	2-3	2	4	**1**	3	2	2	3	**1**
8_2^*	4	3	2	3	2-3	4	2-3	3	2	3-4	2	2	2	1-2	3
8_3	2-4	2-3	2-3	1-3	**1**	2-3	0	**1**	2-3	2	2-3	2-4	**2**	2-4	2
8_4	2-3	2	2	2	**2**	2	**1**	0	3	**1**	2-3	2-3	**1**	2-4	2
8_4^*	3-4	2	2	2	2	3	**1**	2	1-2	2	2-3	2-3	**1**	1-4	2
8_5	4	3	2-3	3	2-3	4	2-3	3	0	3-4	1-3	2-3	2	1-4	3
8_5^*	2-3	1-3	2-3	2-3	2-3	2	2-3	1-2	4	1-2	3	2-3	2	3-4	2
8_6	2	2	2-3	1-2	**1**	**1**	2	**1**	3-4	0	2-3	2	2	2-3	2
8_6^*	3-4	2-3	2	2-3	2-3	3-4	2	2	1-2	2-3	2	2	2	1-3	2-3
8_7	3	2	2	2-3	2	3	2-3	2-3	1-3	2-3	0	**1**	2	1-2	2
8_7^*	2	2	2	1-2	2	2	2-3	2-3	3	2	2	2	2	2	2
8_8	2	2	2	2	2-3	2	2-4	2-3	2-3	2	**1**	0	2-3	1-2	2-3
8_8^*	2	2	2	2	2-3	2	2-4	2-3	2-3	2	2	**1**	2-3	1-2	2
8_9	2-3	2	2	2-3	2	2	**2**	**1**	2	2	2	2-3	0	2-3	2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	0_1	3_1	4_1	5_1	5_2	6_1	6_2	6_3	$3_1 \# 3_1$	$3_1 \# 3_1^*$	7_1	7_2	7_3	7_4
8_{10}	1-2	2	2-3	3	2-3	1-3	2-3	1	3	1	4	2-3	2	1-2
8_{10}^*	1-2	1-2	2-3	1	1	1-3	1-3	1	1-3	1	2	1-2	3-4	2-3
8_{11}	1	2	2	**2**	1	1	1	2	1-3	1-3	2-3	2	3	2-3
8_{11}^*	1	2	2	3	2	2	2	2	3	1-3	4	2	2	2
8_{12}	2	2-3	1	2-4	2-3	1	2	2-3	2-4	2-4	3-5	2-3	2-4	2-4
8_{13}	1	2	1	**2**	1	2	2	1	2-3	2-3	3	2	2-3	2-3
8_{13}^*	1	2	1	2-3	2	2	2	1	2-3	2-3	3-4	2	2	2
8_{14}	1	1	1	2	1	2	1	2	2	2	2-3	2	3	2-3
8_{14}^*	1	2	1	3	2	2	2	2	3	2	4	2	2	2
8_{15}	2	1-2	2-3	1	1	2-3	1-3	2-3	1	2-3	1-2	1-2	4	3-4
8_{15}^*	2	3	2-3	4	3	2-3	3	2-3	4	2-3	5	3	1-2	1-2
8_{16}	1-2	1	1	1-2	1	1-2	1-2	1	2	2	2-3	1-2	3-4	2-3
8_{16}^*	1-2	2	1	3	2-3	1-2	2	1	3	2	4	2-3	2	1-2
8_{17}	1	1	2	2	1-2	1-2	1-2	2	2	2	3	1-2	2-3	1-2
8_{17}^*	1	1	2	2	1-2	1-2	1	2	2	2	3	1-2	2-3	1-2
8_{18}	1-2	1	1-3	2	1-2	1-3	1-2	2	2	1-2	3	1-3	2-3	1-2
8_{18}^*	1-2	1	1-3	2	1-2	1-3	1-2	2	2	1-2	3	1-3	2-3	1-2
8_{19}	3	4	3-4	5	4	3-4	4	3	5	3	6	4	2	2-3
8_{19}^*	3	2	3-4	1	**2**	3-4	2-3	3	1	3	1-2	2-3	5	4-5
8_{20}	1	1-2	1-2	**2**	1	1-2	1-2	1	2-3	1	3	1-2	2-3	2-3
8_{20}^*	1	1-2	1-2	2-3	1-2	1-2	1-2	1	2-3	1	3-4	1-2	2	2
8_{21}	1	1-2	1-2	1-3	1-2	2	1	2	1	1-3	2-4	1-2	3	2-3
8_{21}^*	1	2	1-2	3	2	2	2	2	3	1-3	4	2	1-3	1-3
$3_1 \# 5_1$	3	2	3-4	1	**2**	3-4	2-3	3	1	3	2	2-3	5	4-5
$3_1^* \# 5_1^*$	3	4	3-4	5	4	3-4	4	3	5	3	6	4	2	2-3
$3_1 \# 5_1^*$	2-3	2	1-4	3	2-3	2-4	2-3	2-3	3	1	4	2-4	2	1-3
$3_1^* \# 5_1$	2-3	2	1-4	1	**2**	2-4	1-3	2-3	1-3	1-3	2	1-3	3-**4**	2-**3**
$3_1 \# 5_2$	2	1	2-3	2	1	2-3	1-2	2	1	2	1-3	1-2	4	3-4
$3_1^* \# 5_2^*$	2	3	2-3	4	3	2-3	3	2	4	2	5	3	1-2	2
$3_1 \# 5_2^*$	2	1	1-3	2	1-2	2-3	2	2	2	1	3	2-3	2	2
$3_1^* \# 5_2$	2	1-2	1-3	**2**	1	2-3	2-3	2	2-3	1-2	3	2	2-3	2
$4_1 \# 4_1$	2	2-3	1	2-4	2-3	2	2	2-3	2-4	2-4	3-5	2-3	2-4	1-4
9_1	4	3	4-5	2	3	4-5	3-4	4	2-4	4	1	3	6	5-6
9_1^*	4	5	4-5	6	5	4-5	5	4	6	4	7	5	2	**3**
9_2	1	2	2	2-3	2	2	2	2	1-3	1-3	2-3	1	3	2-3
9_2^*	1	2	2	3	2	2	2	2	3	1-3	4	2	2	2-3
9_3	3	4	3-4	5	4	3-4	4	3-4	5	3-4	6	4	1	2
9_3^*	3	2-3	3-4	2	2	3-4	2-4	3-4	2-4	3-4	1	2	5	4-5
9_4	2	2-3	2-3	2	2	2-3	2-3	2-3	1-4	2-4	2	1	4	3-4
9_4^*	2	3	2-3	4	3	2-3	3	2-3	4	2-4	5	3	1	2
9_5	2	2-3	2-3	3-4	2-3	2-3	2-3	2-3	3-4	2-3	4-5	2-3	2	1
9_5^*	2	2	2-3	2	1	2-3	2-3	2-3	2-3	2-3	2-3	1	3-4	2-4
9_6	3	2	3-4	1	2	3-4	2-3	3	1-3	3	1	2	5	4-5
9_6^*	3	4	3-4	5	4	3-4	4	3	5	3	6	4	2	2-3
9_7	2	1	2-3	2	2	2-3	2	2	2	2	2	1	4	3-4
9_7^*	2	3	2-3	4	3	2-3	3	2	4	2	5	3	**2**	2
9_8	2	1	1	2	2	2	2	2	2	2	2-3	2	3-4	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	7_5	7_6	7_7	$3_1 \# 4_1$	8_1	8_2	8_3	8_4	8_5	8_6	8_7	8_8	8_9	8_{10}	8_{11}
8_{10}	3	2-3	1-3	2-3	1-3	3	2-4	2-4	1-4	2-3	1-2	1-2	2-3	0	2-3
8_{10}^*	1-2	1-2	1-3	1-3	1-3	1-2	2-4	1-4	3-4	1-3	2	1-2	2-3	2	1-2
8_{11}	2	2	2	2-3	**1**	**1**	2	2	3	2	2	2-3	2	2-3	0
8_{11}^*	3	2	2	2-3	2	3	2	2	2	2-3	2	2	2	1-2	2
8_{12}	2-4	2	2	2	**1**	2-3	2	2	2-3	2	2-3	2-4	2-3	2-4	2
8_{13}	2	2	2	2	2	2-3	2-3	2	2-3	2-3	2	2	2	2	2
8_{13}^*	2-3	2	2	2	2	2-3	2-3	2	2-3	2-3	**1**	2	2	2	2
8_{14}	2	2	2	2	2	**1**	2-3	2	3	2	2	2	2	2-3	2
8_{14}^*	3	2	2	2	2	3	2-3	2	1-2	2-3	2	2	2	1-2	2
8_{15}	2	1-2	2-3	1-3	2-3	2	2-4	1-4	4	1-3	3	2-3	2-3	3-4	2
8_{15}^*	4	3	2-3	3-4	2-3	4	2-4	3-4	1-2	3-4	1-2	2	2-3	1-2	3
8_{16}	2	1-2	1-2	1-2	1-3	2	1-3	1-2	3	1-2	2	2	2-3	2	1-2
8_{16}^*	3	2	1-2	2	1-3	3	1-3	2	1-3	2-3	1-2	2	2-3	1-2	2-3
8_{17}	2	1-2	1-2	1-2	2	2	2-3	1-3	2	1-2	1-2	1-2	2	1-3	1-2
8_{17}^*	2	1-2	1-2	1-2	2	2	2-3	1-2	2-3	1-2	1-2	1-2	2	1-3	1-2
8_{18}	2	1-2	1-2	1-2	2-3	2	2-4	1-3	2-3	1-2	1-2	2	2-3	1-3	1-3
8_{18}^*	2	1-2	1-2	1-2	2-3	2	2-4	1-3	2-3	1-2	1-2	2	2-3	1-3	1-3
8_{19}	5	4	3	4-5	3-4	5	3-5	4-5	1-2	4-5	2	3	3-4	2	4
8_{19}^*	1-2	2-3	3-4	2-3	3-4	1-2	3-5	2-4	5	2-3	4	3	3-4	4	2-**3**
8_{20}	2	1-2	1-2	2-3	1-2	2-3	1-3	1-3	2-3	1-3	1-2	2	1-2	1-2	1-2
8_{20}^*	2-3	1-2	1-2	2-3	1-2	2-3	1-3	1-3	2-3	1-3	1-2	2	1-2	1-2	1-2
8_{21}	2-3	1-2	1-2	1-3	2	2	1-3	1-2	3	1-2	2	2-3	2	2-3	2
8_{21}^*	3	2	1-2	2-3	2	3	1-3	2-3	1-2	2-3	1-2	2-3	2	1-3	2
$3_1 \# 5_1$	2	2-3	3-4	2-3	3-4	2	3-5	2-4	5	2-3	4	3	3-4	4	2-**3**
$3_1^* \# 5_1^*$	5	4	3	4-5	3-4	5	3-5	4-5	1-2	4-5	2	3	3-4	2	4
$3_1 \# 5_1^*$	3	2-3	1-3	2-3	2-4	3	2-5	2-4	1-4	2-3	2	2-3	2-4	2	2-4
$3_1^* \# 5_1$	2	1-3	1-**3**	1-3	2-4	2	2-5	1-4	3-**4**	2-3	2-**3**	2-3	2-4	2-4	2-**3**
$3_1 \# 5_2$	2	1-2	2-3	2	2-3	2	2-4	1-3	4	1-2	3	2	2-3	3	2
$3_1^* \# 5_2^*$	4	3	2	3-4	2-3	4	2-4	3-4	1-2	3-4	1-2	2	2-3	1-2	3
$3_1 \# 5_2^*$	2	2	1-3	2	2-3	2	1-4	2-3	2-4	2	2-3	2	1-3	1-2	2-3
$3_1^* \# 5_2$	2	2	1-2	2-3	2-3	2-3	1-4	2-4	2-3	2-3	2	2	1-3	1-3	2
$4_1 \# 4_1$	2-4	2	2	1-2	2-3	2-3	2-3	2	2-3	2-3	2-3	1-4	1-3	2-4	2-3
9_1	2	3-4	4-5	3-4	4-5	2-3	4-6	3-5	6	3-4	5	4	4-5	5	3-4
9_1^*	6	5	4	5-6	4-5	6	4-6	5-6	2-5	5-6	3	4	4-5	3	5
9_2	2	2	2	1-3	2	2-3	2-3	2-3	3	2-3	2	2-3	2	2-3	2
9_2^*	3	2	2	2-3	2	3	2-3	2-3	1-3	2-3	2	2-3	2	2-3	2
9_3	5	4	3-4	4-5	3-4	5	3-5	4-5	1-5	4-5	2-3	3	3-4	2-3	4
9_3^*	2	2-3	3-4	2-4	3-4	2-3	3-5	2-5	5	2-4	4	3-4	3-4	4-5	2-3
9_4	**2**	2	2-3	2-4	2-3	2-3	2-4	2-4	4	2-4	3	2-4	2-3	3-4	2-3
9_4^*	4	3	2-3	3-4	2-3	4	2-4	3-4	1-4	3-4	2-3	2-3	2-3	1-3	3
9_5	3-4	2-3	2-3	2-4	2-3	3-4	2-4	2-4	1-4	2-4	2-3	2	2-3	1-2	2-3
9_5^*	2	2	2-3	1-3	2-3	2-3	2-4	2-4	3-4	2-3	2-3	2-3	2-3	2-4	2
9_6	1	2-3	3-4	2-3	3-4	2	3-5	2-4	5	2-3	4	3	3-4	4	2-3
9_6^*	5	4	3	4-5	3-4	5	3-5	4-5	2-4	4-5	2	3	3-4	2	4
9_7	1	2	2-3	2	2-3	2	2-4	2-3	4	2	3	2	2-3	3	2-3
9_7^*	4	3	2	3-4	2-3	4	2-4	3-4	1-3	3-4	2	2	2-3	1-3	3
9_8	2	1	2	2	2-3	2	2	2	3	2	2-3	2	2-3	2-3	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	8_{12}	8_{13}	8_{14}	8_{15}	8_{16}	8_{17}	8_{18}	8_{19}	8_{20}	8_{21}	$3_1 \# 5_1$	$3_1^* \# 5_1$
8_{10}	2-4	2	2-3	3-4	2	1-3	1-3	2	1-2	2-3	4	2-4
8_{10}^*	2-4	2	1-2	1-2	1-2	1-3	1-3	4	1-2	1-3	2	2
8_{11}	2	2	2	2	1-2	1-2	1-3	4	1-2	2	2-**3**	2-**3**
8_{11}^*	2	2	2	3	2-3	1-2	1-3	2-**3**	1-2	2	4	2-4
8_{12}	0	2	2	2-4	1-2	2-3	1-4	3-5	1-3	2-3	3-5	2-5
8_{13}	2	0	2	2	1-2	2	1-3	3-4	1-2	2	**3**	2-**3**
8_{13}^*	2	2	2	2-3	1-2	2	1-3	**3**	1-2	2	3-4	2-4
8_{14}	2	2	0	1-2	1-2	1-2	1-2	4	1-2	1-2	2-3	1-3
8_{14}^*	2	2	2	3	2	1-2	1-2	2-3	1-2	2	4	2-**3**
8_{15}	2-4	2	1-2	0	1-2	2-3	2-3	5	2	1-2	2	2
8_{15}^*	2-4	2-3	3	4	3-4	2-3	2-3	1-2	2-3	3	5	3-**4**
8_{16}	1-2	1-2	1-2	1-2	0	1-2	1-2	4	1-2	1-3	2-3	1-3
8_{16}^*	1-2	1-2	2	3-4	2	1-2	1-2	2-3	1-2	2-3	4	2-**3**
8_{17}	2-3	2	1-2	2-3	1-2	0	1-2	3	1-2	1-2	3	2-3
8_{17}^*	2-3	2	1-2	2-3	1-2	1-2	1-2	3	1-2	1-2	3	2-3
8_{18}	1-4	1-3	1-2	2-3	1-2	1-2	0	3	1-3	1-3	3	1-3
8_{18}^*	1-4	1-3	1-2	2-3	1-2	1-2	1-2	3	1-3	1-3	3	1-3
8_{19}	3-5	3-4	4	5	4	3	3	0	3-4	4	6	**4**
8_{19}^*	3-5	**3**	2-3	1-2	2-3	3	3	6	**3**	2	2	2
8_{20}	1-3	1-2	1-2	2	1-2	1-2	1-3	3-4	0	1-2	**3**	1-**3**
8_{20}^*	1-3	1-2	1-2	2-3	1-2	1-2	1-3	**3**	1-2	1-2	3-4	1-4
8_{21}	2-3	2	1-2	1-2	1-3	1-2	1-3	4	1-2	0	2	1-4
8_{21}^*	2-3	2	2	3	2-3	1-2	1-3	2	1-2	2	4	2-4
$3_1 \# 5_1$	3-5	**3**	2-3	2	2-3	3	3	6	**3**	2	0	2
$3_1^* \# 5_1^*$	3-5	3-4	4	5	4	3	3	2	3-4	4	6	**4**
$3_1 \# 5_1^*$	2-5	2-4	2-3	3-4	2-3	2-3	1-3	2	1-2	2-4	4	2-4
$3_1^* \# 5_1$	2-5	2-**3**	1-3	2	1-3	2-3	1-3	**4**	1-**3**	1-4	2	0
$3_1 \# 5_2$	2-4	2	1-2	1-2	1-2	2	2	5	2	1-2	**1**	1-3
$3_1^* \# 5_2^*$	2-4	2-3	3	4	3	2	2	1-2	2-3	3	5	**3**
$3_1 \# 5_2^*$	2-4	2-3	2	2-3	1-2	1-2	1-2	**3**	1-2	1-3	3	1-3
$3_1^* \# 5_2$	2-4	2	2	2	1-2	1-2	1-2	3	1-2	1-3	**3**	**1**
$4_1 \# 4_1$	2	2	2	2-4	1-2	2-3	1-4	3-5	2-3	1-3	3-5	1-5
9_1	4-6	4	3-4	2-3	3-4	4	4	7	4	3-5	2-3	3
9_1^*	4-6	4-5	5	6	5	4	4	2-3	4-5	5	7	**5**
9_2	2-3	2	2	2-3	1-3	2	1-3	4	1-2	1-2	2-4	1-4
9_2^*	2-3	2	2	3	2-3	2	1-3	2-4	1-2	2	4	2-4
9_3	3-5	3-4	4	5	4-5	3-4	3-4	1-3	3-4	4	6	4-**5**
9_3^*	3-5	3	2-3	1-3	2-3	3-4	3-4	6	3	2-4	1-3	2-3
9_4	2-4	2-3	2-3	1-3	1-3	2-3	2-4	5	2-3	1-3	1-3	1-3
9_4^*	2-4	2-3	3	4	3-4	2-3	2-4	1-3	2-3	3	5	3-5
9_5	2-4	2-3	2-3	3-4	2-4	1-3	1-3	2-3	1-3	2-3	4-5	2-**4**
9_5^*	2-4	2	2	1-2	1-2	1-3	1-3	4-5	1-2	1-3	2-3	2-3
9_6	3-5	3	2-3	2	2-3	3	3	6	3	2-4	2	2
9_6^*	3-5	3-4	4	5	4	3	3	2	3-4	4	6	**4**
9_7	2-4	2-3	2	2-3	2	2	2	5	2-3	1-3	1-3	1-3
9_7^*	2-4	2-3	3	4	3	2	2	1-3	2-3	3	5	**3**
9_8	2	2	2	1-3	1-2	1-2	1-2	4-5	1-3	1-3	2-3	1-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 5_2$	$3_1^* \# 5_2$	$4_1 \# 4_1$	9_1	9_2	9_3	9_4	9_5	9_6	9_7	9_8	9_9	9_{10}
8_{10}	3	1-3	2-4	5	2-3	2-3	3-4	1-2	4	3	2-3	4	1-3
8_{10}^*	1-2	1-2	2-4	3	2-3	4-5	1-3	2-4	2	1-3	1-3	2-3	3-4
8_{11}	2	2	2-3	3-4	2	4	2-3	2-3	2-3	2-3	2-3	2-3	3-4
8_{11}^*	3	2-3	2-3	5	2	2-3	3	2	4	3	2	4	2-3
8_{12}	2-4	2-4	2	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2	3-5	2-5
8_{13}	2	2	2	4	2	3-4	2-3	2-3	3	2-3	2	3	2-4
8_{13}^*	2-3	2-3	2	4-5	2	3	2-3	2	3-4	2-3	2	3-4	2-3
8_{14}	1-2	2	2	3-4	2	4	2-3	2-3	2-3	2	2	2-3	3-4
8_{14}^*	3	2	2	5	2	2-3	3	2	4	3	2	4	2-3
8_{15}	1-2	2	2-4	2-3	2-3	5	1-3	3-4	2	2-3	1-3	1-3	4-5
8_{15}^*	4	2-3	2-4	6	3	1-3	4	1-2	5	4	3-4	5	1-3
8_{16}	1-2	1-2	1-2	3-4	1-3	4-5	1-3	2-4	2-3	2	1-2	2-3	3-4
8_{16}^*	3	1-2	1-2	5	2-3	2-3	3-4	1-2	4	3	2	4	2-3
8_{17}	2	1-2	2-3	4	2	3-4	2-3	1-3	3	2	1-2	3	2-3
8_{17}^*	2	1-2	2-3	4	2	3-4	2-3	1-3	3	2	1-2	3	2-3
8_{18}	2	1-2	1-4	4	1-3	3-4	2-4	1-3	3	2	1-2	3	2-3
8_{18}^*	2	1-2	1-4	4	1-3	3-4	2-4	1-3	3	2	1-2	3	2-3
8_{19}	5	3	3-5	7	4	1-3	5	2-3	6	5	4-5	6	1-3
8_{19}^*	1-2	**3**	3-5	2-3	2-4	6	1-3	4-5	2	1-3	2-3	1-3	5-6
8_{20}	2	1-2	2-3	4	1-2	3-4	2-3	1-3	3	2-3	1-3	3	2-4
8_{20}^*	2-3	1-3	2-3	4-5	1-2	3	2-3	1-2	3-4	2-3	1-3	3-4	2-3
8_{21}	1-2	1-3	1-3	3-5	1-2	4	1-3	2-3	2-4	1-3	1-3	2-4	3-4
8_{21}^*	3	1-3	1-3	5	2	2-4	3	1-3	4	3	2-3	4	1-4
$3_1 \# 5_1$	**1**	**3**	3-5	2-3	2-4	6	1-3	4-5	2	1-3	2-3	1-3	5-6
$3_1^* \# 5_1^*$	5	3	3-5	7	4	1-3	5	2-3	6	5	4-5	6	2-3
$3_1 \# 5_1^*$	3	1-3	1-5	5	2-4	2-3	3-5	2-3	4	3	2-3	4	2-3
$3_1^* \# 5_1$	1-3	**1**	1-5	3	1-4	4-**5**	1-3	2-**4**	2	1-3	1-3	2-3	3-**4**
$3_1 \# 5_2$	0	2	2-4	2-4	1-3	5	1-3	3-4	2-3	1-2	1-2	1-3	4-5
$3_1^* \# 5_2^*$	4	2	2-4	6	3	1-3	4	1-2	5	4	3-4	5	1-3
$3_1 \# 5_2^*$	2	1-3	2-4	4	1-3	3	2-4	2	3	2	2	3	2-3
$3_1^* \# 5_2$	2	0	2-4	4	1-3	3-4	2-3	2-3	3	2-3	2-3	3	2-3
$4_1 \# 4_1$	2-4	2-4	0	4-6	1-3	3-5	2-4	2-4	3-5	2-4	2	3-5	2-5
9_1	2-4	4	4-6	0	**3**	7	**2**	5-6	**1**	**2**	3-4	**1**	6-7
9_1^*	6	4	4-6	8	5	**1**	6	**3**	7	6	5-6	7	**2**
9_2	1-3	1-3	1-3	**3**	0	4	**1**	2-3	**2**	**1**	**2**	**2**	3-4
9_2^*	3	1-3	1-3	5	2	**2**	3	2	4	3	2-3	4	2-3
9_3	5	3-4	3-5	7	4	0	5	**2**	6	5	4-5	6	**1**
9_3^*	1-3	3	3-5	**1**	**2**	6	**1**	4-5	2	2-3	2-4	2	5-6
9_4	1-3	2-3	2-4	**2**	**1**	5	0	3-4	2-3	2	2-3	**1**	4-5
9_4^*	4	2-4	2-4	6	3	**1**	4	**1**	5	4	3-4	5	2
9_5	3-4	2-3	2-4	5-6	2-3	**2**	3-4	0	4-5	3-4	2-4	4-5	**1**
9_5^*	1-2	2	2-4	**3**	2	4-5	**1**	2-4	2-3	2	2-3	**2**	3-5
9_6	2-3	3	3-5	**1**	**2**	6	2-3	4-5	0	**1**	2-3	2	5-6
9_6^*	5	3	3-5	7	4	2	5	2-3	6	5	4-5	6	2-3
9_7	1-2	2-3	2-4	**2**	**1**	5	2	3-4	**1**	0	2	**1**	4-5
9_7^*	4	2	2-4	6	3	2-3	4	2	5	4	3-4	5	2-3
9_8	1-2	2-3	2	3-4	**2**	4-5	2-3	2-4	2-3	2	0	2-3	3-5

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	0_1	3_1	4_1	5_1	5_2	6_1	6_2	6_3	$3_1 \# 3_1$	$3_1 \# 3_1^*$	7_1	7_2	7_3
9_8^*	2	2-3	1	3-4	2-3	1	2	2	3-4	2	4-5	2-3	2-3
9_9	3	2	3-4	2	2	3-4	2-3	3	2-3	3	1	**2**	5
9_9^*	3	4	3-4	5	4	3-4	4	3	5	3	6	4	1
9_{10}	2-3	3-4	2-4	4-5	3-4	2-4	3-4	2-3	4-5	2-3	5-6	3-4	1
9_{10}^*	2-3	2	2-4	2	2	2-4	2-3	2-3	1-3	2-3	**2**	2	4-5
9_{11}	2	3	2	4	3	2-3	3	2-3	4	2-3	5	3	1
9_{11}^*	2	2	2	1	1	2-3	2-3	2-3	1-3	2-3	2	2	4
9_{12}	1	2	2	2-3	2	1	2	2	2-3	2-3	2-3	1	3
9_{12}^*	1	2	2	3	2	2	2	2	3	2-3	4	2	**2**
9_{13}	2-3	3-4	2-4	4-5	3-4	2-4	3-4	2-3	4-5	2-3	5-6	3-4	1
9_{13}^*	2-3	2	2-4	1	2	2-4	2-3	2-3	2-3	2-3	2	**2**	4-5
9_{14}	1	2	2	2-3	2	2	2	2	2-3	2	3-4	2	2
9_{14}^*	1	1	2	2	1	1	2	2	2	2	3	2	2-3
9_{15}	2	2-3	1	3-4	2-3	2	2	2-3	3-4	2-3	4-5	2-3	2
9_{15}^*	2	2	1	**2**	1	2	2	2-3	2-3	2-3	2-3	1	3-4
9_{17}	2	2	1	2-3	2-3	2	1	2-3	2-3	2-3	2-4	2-3	3-4
9_{17}^*	2	2	1	3	2-3	2	2	2-3	3	2-3	4	2-3	2-4
9_{18}	2	2	2-3	2	1	2-3	2-3	2-3	2-3	2-3	**2**	1	4
9_{18}^*	2	3	2-3	4	3	2-3	3	2-3	4	2-3	5	3	1
9_{19}	1	2	1	2-3	2	1	2	2	2-3	2-3	3-4	2	2-3
9_{19}^*	1	2	1	2-3	2	2	2	2	2-3	2-3	3-4	2	2-3
9_{20}	2	1	2	2	1	**2**	1	2	2	2	**2**	2	4
9_{20}^*	2	3	2	4	3	2-3	3	2	4	2	5	3	2
9_{21}	1	2	2	3	2	2	2	2	3	2	4	2	2
9_{21}^*	1	1	2	2	1	2	2	2	2	2	2-3	2	3
9_{23}	2	2	2-3	1	1	2-3	2-3	2-3	2-3	2-3	2	2	4
9_{23}^*	2	3	2-3	4	3	2-3	3	2-3	4	2-3	5	3	2
9_{26}	1	2	2	3	2	2	2	2	3	2	4	2	2
9_{26}^*	1	1	2	1	1	2	1	2	2	2	2	2	3
9_{27}	1	1	1	2	2	2	2	1	2	2	3	2	2-3
9_{27}^*	1	2	1	2-3	2	2	1	1	2-3	2	3-4	2	2-3
9_{31}	2	1	2-3	1	1	2-3	2	1	2	2	2	2	3-4
9_{31}^*	2	2	2-3	3	2-3	2-3	2-3	1	3	2	4	2-3	2
$3_1 \# 6_1$	2	1	2	2	2	1	2	2	1-2	1-2	2-3	2-3	3-4
$3_1^* \# 6_1^*$	2	2-3	2	3-4	2-3	1-**2**	2-3	2	3-4	1-2	4-5	2-3	2-3
$3_1 \# 6_1^*$	2	1	2	2	2	1-**2**	2	2	1-2	1-2	2-3	2-3	3-4
$3_1^* \# 6_1$	2	2-3	2	3-4	2-3	1	**2**	2	3-4	1-2	4-5	2-3	2-3
$3_1 \# 6_2$	2	1	2	1-2	1-2	**2**	1	2	1	2	1-3	1-3	4
$3_1^* \# 6_2^*$	2	3	2	4	3	2-3	3	2	4	2	5	3	1-3
$3_1 \# 6_2^*$	2	1	2	2	2	2-3	1-2	2	2	1	3	1-3	2-4
$3_1^* \# 6_2$	2	1-2	2	2-3	2-3	**2**	1	2	2-3	1-2	3-4	1-3	2-3
$3_1 \# 6_3$	2	1	2-3	2	2	2-3	2	1	1	1	2-3	2-3	3-4
$3_1^* \# 6_3$	2	2	2-3	3	2-3	2-3	2-3	1	3	1-2	4	2-3	1-3
$3_1 \# 3_1 \# 3_1$	3	2	3-4	2-3	2-3	3-4	2-3	3	1	3	2-4	2-4	5
$3_1^* \# 3_1^* \# 3_1^*$	3	4	3-4	5	4	3-4	4	3	5	3	6	4	2-4
$3_1 \# 3_1^* \# 3_1^*$	2-3	2	2-4	3	2-3	2-4	2-3	2-3	3	1	4	2-4	2-4
$3_1 \# 3_1 \# 3_1^*$	2-3	2	2-4	2-3	2-3	2-4	2-3	2-3	1	1	2-4	2-4	3-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	7_4	7_5	7_6	7_7	$3_1 \# 4_1$	8_1	8_2	8_3	8_4	8_5	8_6	8_7	8_8	8_9
9_8^*	2	3-4	2	2	2	2	3	2	2	1-3	2	2	2	2-3
9_9	4-5	1	2-3	3-4	2-3	3-4	2-3	3-5	2-4	5	2-3	4	3	3-4
9_9^*	**2**	5	4	3	4-5	3-4	5	3-5	4-5	1-4	4-5	2-3	3	3-4
9_{10}	1	4-5	3-4	2-3	3-5	2-4	4-5	2-5	3-5	1-4	3-5	2-3	2-3	2-4
9_{10}^*	3-5	2-3	2-3	2-4	1-3	2-4	2-3	2-5	2-4	4-5	2-3	3-4	2-3	2-4
9_{11}	2	4	3	2-3	3	2-3	4	2-4	3	1-4	3-4	2	2	2-3
9_{11}^*	3-4	2	1	2-3	1-3	2-3	2	2-4	2-3	4	2-3	3	2-3	2-3
9_{12}	2-3	2	1	2	1-3	2	2-3	2	2-3	3	2	2	2-3	2
9_{12}^*	2-3	3	2	2	2-3	2	3	2	2	1-3	2-3	2	2-3	2
9_{13}	1	4-5	3-4	2-3	3-5	2-4	4-5	2-5	3-5	2-4	3-5	2	2-3	2-4
9_{13}^*	3-5	1	2-3	2-4	1-3	2-4	2	2-5	2-4	4-5	2-3	3-4	2-3	2-4
9_{14}	2	2-3	2	1	2-3	2	2-3	2	2	2-3	2-3	2	2	2
9_{14}^*	2-3	2	2	2	2	2	2	2	2-3	2-3	2	2	2	2
9_{15}	2	3-4	2	2	2	2-3	3	2-3	2	1-3	2-3	2-3	2	2-3
9_{15}^*	2-4	2	1	2	2	2-3	2-3	2-3	2	3	2-3	2-3	2-3	2-3
9_{17}	2-3	2-3	2	1	2	2-3	2	2-3	2	3	2	2-3	2-3	2
9_{17}^*	2-3	3	2	2	2	2-3	3	2-3	2	1-2	2-3	2-3	2-3	2
9_{18}	3-4	1	2	2-3	2-3	2-3	2-3	2-4	2-4	4	2-3	3	2-3	2-3
9_{18}^*	2	4	3	2-3	3-4	2-3	4	2-4	3-4	2-4	3-4	2-3	2	2-3
9_{19}	2-3	2-3	2	1	2	2	2-3	2	2	2-3	2	2	2-3	2
9_{19}^*	2-3	2-3	2	2	2	2	2-3	2	2	2-3	2-3	2	2-3	2
9_{20}	3-4	1	1	2-3	2	2-3	2	2-3	2	4	2	3	2	2
9_{20}^*	2	4	3	2	3	2-3	4	2-3	3	2	3-4	2	2	2
9_{21}	1	3	2	2	2-3	2	3	2-3	2-3	1-3	2-3	2	2	2
9_{21}^*	2-3	2	1	2	1-2	2	2	2-3	2-3	3	2	2	2	2
9_{23}	3-4	1	2	2-3	2-3	2-3	2	2-4	2-4	4	2-3	3	2-3	2-3
9_{23}^*	2	4	3	2-3	3-4	2-3	4	2-4	3-4	2-4	3-4	2	2	2-3
9_{26}	2	3	2	1	2-3	2	3	2-3	2-3	1-2	2-3	2	2	2
9_{26}^*	2-3	2	2	2	1-2	2	2	2-3	2	3	2	2	2	2
9_{27}	2-3	2	1	2	2	2	2	2-3	2	2	2	2	2	2
9_{27}^*	2	2-3	2	2	2	2	2	2-3	2	2-3	2	2	2	2
9_{31}	2-3	2	2	2-3	1-2	2-3	2	2-4	2-3	3-4	2	2	2	2-3
9_{31}^*	2	3	2-3	2	2-3	2-3	3	2-4	2-4	2-3	2-3	2	2	2-3
$3_1 \# 6_1$	2-4	2	2	1-3	1	2	2	2	2-3	3-4	2	2-3	2	2-3
$3_1^* \# 6_1^*$	1-2	3-4	2-3	1-2	2-3	2-3	3-4	2	2	1-3	2-3	2	2	2-3
$3_1 \# 6_1^*$	2-4	2	2	1-3	1	2-3	2	2	2	**3**	2	2-3	2	2-3
$3_1^* \# 6_1$	1-2	3-4	2-3	1-2	2-3	2	3	2	2-3	1-3	2	2	2	2-3
$3_1 \# 6_2$	3-4	2	1-2	2-3	1	2-3	2	2-3	1-2	4	1-2	3	2	2
$3_1^* \# 6_2^*$	1-2	4	3	2	3	2-3	4	2-3	3	1-2	3-4	1-2	2	2
$3_1 \# 6_2^*$	1-3	2	2	1-3	1	2-3	2	1-3	2-3	2	2	2-3	1-2	2
$3_1^* \# 6_2$	1-2	2-3	2-3	1-2	1-3	2-3	2	1-3	2	2-3	2	2	1-2	2
$3_1 \# 6_3$	2-3	1-2	2	2-3	2	1-3	1-2	2-4	2-3	3-4	1-2	2	2	1-3
$3_1^* \# 6_3$	2	3	2-3	2	2-3	1-3	3	2-4	2-4	2	2-3	1-2	2	1-3
$3_1 \# 3_1 \# 3_1$	4-5	2-3	2-3	3-4	2-3	3-4	2-3	3-5	2-4	5	2-3	4	3	3-4
$3_1^* \# 3_1^* \# 3_1^*$	2-3	5	4	3	4-5	3-4	5	3-5	4-5	1-2	4-5	2-3	3	3-4
$3_1 \# 3_1^* \# 3_1^*$	2-3	3	2-3	2-3	2-3	2-4	3	2-5	2-4	1-2	2-3	2-3	2-3	2-4
$3_1 \# 3_1 \# 3_1^*$	2-3	2-3	2-3	2-3	1-3	2-4	2-3	2-5	2-4	3-4	2-3	2-3	2-3	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	8_{10}	8_{11}	8_{12}	8_{13}	8_{14}	8_{15}	8_{16}	8_{17}	8_{18}	8_{19}	8_{20}	8_{21}
9_8^*	1-3	2	2	2	2	3-4	2	1-2	1-2	2-3	1-3	2-3
9_9	4	2-3	3-5	3	2-3	1-3	2-3	3	3	6	3	2-4
9_9^*	2-3	4	3-5	3-4	4	5	4	3	3	1-3	3-4	4
9_{10}	1-3	3-4	2-5	2-4	3-4	4-5	3-4	2-3	2-3	1-3	2-4	3-4
9_{10}^*	3-4	2-3	2-5	2-3	2-3	1-3	2-3	2-3	2-3	5-6	2-3	1-4
9_{11}	1-2	3	2-3	2-3	3	4	3	2-3	2-3	1-2	2-3	3
9_{11}^*	3-4	2	2-3	2	2	1-2	2	2-3	2-3	5	2	1-3
9_{12}	2-3	2	2	2	2	2-3	1-3	2	1-3	4	1-2	1-2
9_{12}^*	2-3	2	2	2	2	3	2-3	2	1-3	2-4	1-2	2
9_{13}	2	3-4	2-5	2-4	3-4	4-5	3-4	2-3	2-3	2	2-4	3-4
9_{13}^*	3-4	2-3	2-5	2-3	2-3	2	1-3	2-3	2-3	5-6	2-3	1-4
9_{14}	1-2	2	2	2	2	2-3	2-3	1-2	2	3	1-2	2
9_{14}^*	1-3	2	2	2	2	2	2	1-2	2	3-4	1-2	2
9_{15}	2	2-3	2	2	2	3-4	2	1-3	1-3	2-**3**	2-3	2-3
9_{15}^*	2-4	2	2	2	2	1-2	2	1-3	1-3	4-5	2	1-3
9_{17}	2-4	2	2	2	2	1-4	2	1-3	1-3	4	2-3	1-2
9_{17}^*	2-4	2-3	2	2	2	3-4	2	1-2	1-3	2-4	2-3	2-3
9_{18}	3-4	2	2-4	2	2	2	1-2	2-3	2-3	5	2	1-3
9_{18}^*	1-2	3	2-4	2-3	3	4	3-4	2-3	2-3	1-3	2-3	3
9_{19}	2-3	2	2	2	2	2-3	2	1-2	1-3	3-4	1-2	2
9_{19}^*	2-3	2	2	2	2	2-3	2	1-2	1-3	3-4	1-2	2
9_{20}	3	2	2-3	2	2	2	1-2	2	2	5	2	1-2
9_{20}^*	1-2	3	2-3	2-3	3	4	3	2	2	1-3	2-3	3
9_{21}	1-2	2	2-3	2	2	3	2-3	1-2	1-2	2-3	1-2	2
9_{21}^*	2-3	2	2-3	2	2	1-2	1-2	1-2	1-2	4	1-2	1-2
9_{23}	3-4	2	2-4	2	2	2	1-2	2-3	2-3	5	2	2-3
9_{23}^*	1-2	3	2-4	2-3	3	4	3-4	2-3	2-3	2	2-3	3
9_{26}	1-2	2	2-3	2	2	3	2-3	1-2	1-2	2	1-2	2
9_{26}^*	2-3	2	2-3	2	2	1-2	1-2	1-2	1-2	4	1-2	1-2
9_{27}	1-2	2	2	2	2	2-3	2	1-2	1-2	3-4	1-2	1-2
9_{27}^*	1-2	2	2	2	2	2-3	2	1-2	1-2	3	1-2	1-2
9_{31}	2	2	2-4	2	2	1-2	1-2	1-2	1-2	4	2	1-3
9_{31}^*	1-2	2-3	2-4	2	2-3	3-4	2	1-2	1-2	2	2	2-3
$3_1 \# 6_1$	2-3	1-2	2	2-3	2	1-3	2	2	1-2	4-5	1-3	1-3
$3_1^* \# 6_1^*$	1-3	2-3	2	2-3	2-3	3-4	2-3	2	1-2	2-3	1-3	2-3
$3_1 \# 6_1^*$	2-3	1-3	2	2-3	2	1-3	2	2	1-2	4-5	1-3	1-3
$3_1^* \# 6_1$	1-3	2	2	2-3	2-3	3-4	2-3	2	1-2	2-3	1-3	2-3
$3_1 \# 6_2$	3	2	2-3	2-3	2	1-2	2	2	2	5	2-3	1-2
$3_1^* \# 6_2^*$	1-3	3	2-3	2-3	3	4	3	2	2	1-2	2-3	3
$3_1 \# 6_2^*$	1-2	2-3	1-3	1-3	1-2	2-3	1-2	1-2	1-2	3-4	1-2	1-3
$3_1^* \# 6_2$	1-3	2	1-3	1-3	1-2	2-4	1-3	1-2	1-2	3	1-3	1-2
$3_1 \# 6_3$	2	2-3	2-4	2	2	2	1-2	2	2	4	1-2	2
$3_1^* \# 6_3$	1-2	2-3	2-4	2	2-3	3-4	2	2	2	2	1-2	2-3
$3_1 \# 3_1 \# 3_1$	4	2-4	3-5	3-4	2-3	1-2	2-3	3	3	6	3-4	2
$3_1^* \# 3_1^* \# 3_1^*$	2-4	4	3-5	3-4	4	5	4	3	3	1-2	3-4	4
$3_1 \# 3_1^* \# 3_1^*$	1-2	2-4	2-5	2-4	2-3	3-4	2-3	1-3	1-3	2	1-2	2-4
$3_1 \# 3_1 \# 3_1^*$	2	2-4	2-5	2-4	2-3	1-2	1-3	1-3	1-3	4	1-2	1-2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 5_1$	$3_1^* \# 5_1$	$3_1 \# 5_2$	$3_1^* \# 5_2$	$4_1 \# 4_1$	9_1	9_2	9_3	9_4	9_5
9_8^*	4-5	2-**3**	3-4	2	2	5-6	2-3	2-4	3-4	2-3
9_9	1-3	2-3	1-3	3	3-5	**1**	**2**	6	**1**	4-5
9_9^*	6	**4**	5	3	3-5	7	4	2	5	**2**
9_{10}	5-6	3-**4**	4-5	2-3	2-5	6-7	3-4	**1**	4-5	**1**
9_{10}^*	2-3	2-3	1-3	2-3	2-5	**2**	2-3	5-6	2	3-5
9_{11}	5	3-**4**	4	2-3	2-3	6	3	2	4	2
9_{11}^*	2	2	1-2	2	2-3	2-3	**2**	5	**1**	3-4
9_{12}	2-4	1-4	1-3	1-3	1-3	3-4	**1**	4	2	2-3
9_{12}^*	4	2-4	3	1-3	1-3	5	2	2-3	3	2
9_{13}	5-6	3-**4**	4-5	2-3	2-5	6-7	3-4	**1**	4-5	**1**
9_{13}^*	2	2	2-3	2-3	2-5	**2**	2-3	5-6	2	3-5
9_{14}	3-4	2-**3**	2-3	1-2	2-3	4-5	2	3	2-3	2
9_{14}^*	3	2-3	2	1-2	2-3	4	2	3-4	2-3	2-3
9_{15}	4-5	2-**4**	3-4	1-3	2	5-6	2-3	2-3	3-4	2
9_{15}^*	2-**3**	1-**3**	1-2	1-2	2	3-4	**1**	4-5	2	2-4
9_{17}	2-4	1-4	1-3	1-3	2	3-5	2-3	4-5	2-4	2-4
9_{17}^*	4	2-4	3	1-3	2	5	2-3	2-5	3-4	2-4
9_{18}	1-3	1-3	2	2	2-4	**2**	**1**	5	2	3-4
9_{18}^*	5	3-**4**	4	2-3	2-4	6	3	**1**	4	2
9_{19}	3-4	2-4	2-3	1-3	2	4-5	2	3-4	2-3	2-3
9_{19}^*	3-4	2-4	2-3	1-3	2	4-5	2	3-4	2-3	2-3
9_{20}	1-3	1-3	2	2	2-3	2-3	**2**	5	2-3	3-4
9_{20}^*	5	**3**	4	2	2-3	6	3	2-3	4	2
9_{21}	4	2-**3**	3	1-2	2-3	5	2	2-3	3	**1**
9_{21}^*	2-3	2-3	2	1-2	2-3	3-4	2	4	**2**	2-3
9_{23}	2	2	2	2	2-4	**2**	2-3	5	2-3	3-4
9_{23}^*	5	3-**4**	4	2-3	2-4	6	3	2-3	4	2
9_{26}	4	2-**3**	3	1-2	2-3	5	2	2-3	3	2
9_{26}^*	2	2	2	1-2	2-3	3	2	4	2-3	2-3
9_{27}	3	1-3	2	2-3	2	4	2	3-4	2-3	2-3
9_{27}^*	3-4	1-**3**	2-3	2	2	4-5	2	3-4	2-3	2-3
9_{31}	2	1-2	2	2	1-4	3	2-3	4-5	2-3	2-4
9_{31}^*	4	2-**3**	3	2	1-4	5	2-3	2-3	3-4	2
$3_1 \# 6_1$	2-3	2-3	1-2	1-3	2-3	3-4	2-3	4-5	1-4	2-4
$3_1^* \# 6_1^*$	4-5	2-**3**	3-4	1-2	2-3	5-6	2-3	2-4	3-4	2-3
$3_1 \# 6_1^*$	2-3	2-3	1-2	1-3	2-3	3-4	2-3	4-5	1-4	2-4
$3_1^* \# 6_1$	4-5	2-**3**	3-4	1-2	2-3	5-6	2-3	2-4	3-4	2-3
$3_1 \# 6_2$	2	2-3	1-2	2-3	2-3	2-4	2-3	5	1-4	3-4
$3_1^* \# 6_2^*$	5	**3**	4	2	2-3	6	3	1-4	4	1-3
$3_1 \# 6_2^*$	3	2-3	2	1-3	2-3	4	2-3	3-5	2-4	2-4
$3_1^* \# 6_2$	3-4	2-**3**	2-3	1-2	2-3	4-5	2-3	3-4	2-4	2-3
$3_1 \# 6_3$	2	2-3	2	2-3	2-4	3-4	2-3	4-5	2-4	2-4
$3_1^* \# 6_3$	4	2-**3**	3	2	2-4	5	2-3	2-4	3-4	1-3
$3_1 \# 3_1 \# 3_1$	2	2-4	1-2	3-4	3-5	2-5	2-4	6	2-5	4-5
$3_1^* \# 3_1^* \# 3_1^*$	6	**4**	5	3	3-5	7	4	2-5	5	2-4
$3_1 \# 3_1^* \# 3_1^*$	4	2-4	3	1-3	2-5	5	2-4	2-5	3-5	2-4
$3_1 \# 3_1 \# 3_1^*$	2	2-4	1-2	1-3	2-5	3-5	2-4	4-5	2-5	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	9_6	9_7	9_8	9_9	9_{10}	9_{11}	9_{12}	9_{13}	9_{14}	9_{15}	9_{17}	9_{18}	9_{19}
9_8^*	4-5	3-4	2	4-5	2-3	2	2	2-3	2	**1**	2	3-4	2
9_9	2	**1**	2-3	0	5-6	5	2-3	5-6	3-4	4-5	2-4	2	3-4
9_9^*	6	5	4-5	6	2	2	4	**1**	3	2-3	4	5	3-4
9_{10}	5-6	4-5	3-5	5-6	0	2	3-4	2	2-3	2-3	3-4	4-5	2-4
9_{10}^*	2-3	2-3	2-3	2	4-6	4-5	2-3	4-6	2-4	3-5	2-4	2	2-4
9_{11}	5	4	3	5	2	0	3	2	2	**1**	3	4	2-3
9_{11}^*	2	2-3	2	2	4-5	4	2	4-5	2-3	3	2-3	2	2-3
9_{12}	2-3	2	**1**	2-3	3-4	3	0	3-4	2	2-3	2-3	2	2
9_{12}^*	4	3	2	4	2-3	2	2	2-3	2	2	2-3	3	2
9_{13}	5-6	4-5	3-5	5-6	2	2	3-4	0	2-3	2-3	3-4	4-5	2-4
9_{13}^*	2	2	2-3	**1**	4-6	4-5	2-3	4-6	2-4	3-5	2-4	2	2-4
9_{14}	3-4	2-3	2	3-4	2-3	2	2	2-3	0	2	2	2-3	**1**
9_{14}^*	3	2	2	3	2-4	2-3	2	2-4	2	2-3	2-3	2	2
9_{15}	4-5	3-4	2	4-5	2-3	**1**	2-3	2-3	2	0	2	3-4	2
9_{15}^*	2-3	2	**1**	2-3	3-5	3	2	3-5	2-3	2	2	2	2
9_{17}	2-4	2-3	2	2-4	3-4	3	2-3	3-4	2	2	0	2-4	**1**
9_{17}^*	4	3	2	4	2-4	2-3	2-3	2-4	2-3	2	2	3-4	2
9_{18}	**1**	2	2-3	2	4-5	4	2	4-5	2-3	3-4	2-4	0	2-3
9_{18}^*	5	4	3-4	5	2	2	3	2	2	2	3-4	4	2-3
9_{19}	3-4	2-3	2	3-4	2-4	2-3	2	2-4	**1**	2	**1**	2-3	0
9_{19}^*	3-4	2-3	2	3-4	2-4	2-3	2	2-4	2	2	2	2-3	2
9_{20}	2	**1**	2	2	4-5	4	**1**	4-5	2-3	3	2	2	2-3
9_{20}^*	5	4	3	5	2-3	2	3	2	2	2	3	4	2-3
9_{21}	4	3	2-3	4	2	**1**	2	2	2	2	2-3	3	2
9_{21}^*	2-3	2	2	2-3	3-4	3	2	3-4	2	2-3	2-3	2	2
9_{23}	**1**	2	2-3	2	4-5	4	2-3	4-5	2-3	3-4	2-4	2	2-3
9_{23}^*	5	4	3-4	5	2-3	2	3	2	2	2	3-4	4	2-3
9_{26}	4	3	2-3	4	2-3	2	2	2	**1**	2	2	3	2
9_{26}^*	2	2	2	2-3	3-4	3	2	3-4	2	2-3	2	2	2
9_{27}	3	2	**1**	3	2-4	2-3	2	2-4	2	2	2	2-3	2
9_{27}^*	3-4	2-3	2	3-4	2-3	2	2	2-3	2	2	2	2-3	2
9_{31}	2	2	2	2-3	3-4	3-4	2-3	3-4	2-3	2-4	2-3	2	2-3
9_{31}^*	4	3	2-3	4	2-3	2	2-3	2	2	2	2-3	3-4	2-3
$3_1 \# 6_1$	2-3	2	2	2-3	3-5	3-4	2	3-5	2-3	2-3	2-3	2-3	2
$3_1^* \# 6_1^*$	4-5	3-4	2	4-5	1-3	1-3	2-3	2-3	2	2-3	2-3	3-4	2-3
$3_1 \# 6_1^*$	2-3	2	2	2-3	3-5	3-4	2-3	3-5	2	2-3	2-3	2-3	2-3
$3_1^* \# 6_1$	4-5	3-4	2-3	4-5	1-3	1-3	2	2-3	2	2-3	2-3	3-4	2
$3_1 \# 6_2$	2-3	2	2	2-3	4-5	4	2-3	4-5	2-3	3	1-2	2-3	2-3
$3_1^* \# 6_2^*$	5	4	3	5	1-3	1-3	3	2-3	2	1-3	3	4	2-3
$3_1 \# 6_2^*$	3	2	1-2	3	2-4	2-4	2-3	2-4	1-3	1-3	1-3	2-3	1-3
$3_1^* \# 6_2$	3-4	2-3	1-3	3-4	2-3	2-3	2-3	2-3	1-2	1-3	1-2	2-4	1-3
$3_1 \# 6_3$	2-3	1-2	2	2-3	3-4	3-4	1-3	3-4	2-3	2-4	1-3	2-3	2-3
$3_1^* \# 6_3$	4	3	2-3	4	2-3	2-3	2-3	2-3	2	1-3	2-3	3-4	2-3
$3_1 \# 3_1 \# 3_1$	2-4	2-3	2-3	2-4	5-6	5	2-4	5-6	3-4	4-5	2-4	2-4	3-4
$3_1^* \# 3_1^* \# 3_1^*$	6	5	4-5	6	2-4	2-4	4	2-4	3	2-4	4	5	3-4
$3_1 \# 3_1^* \# 3_1^*$	4	3	2-3	4	2-4	2-4	2-4	2-4	2-3	2-4	2-4	3-4	2-4
$3_1 \# 3_1 \# 3_1^*$	2-4	2-3	2-3	2-4	3-4	3-4	2-4	3-4	2-3	2-4	2-4	2-4	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	9_{20}	9_{21}	9_{23}	9_{26}	9_{27}	9_{31}	$3_1 \# 6_1$	$3_1^* \# 6_1$	$3_1 \# 6_2$	$3_1^* \# 6_2$
9_8^*	3	2	3-4	2	2	2-3	2	2	3	1-2
9_9	2	4	2	4	3	2-3	2-3	4-5	2-3	3-4
9_9^*	5	2-3	5	2-3	3-4	4	4-5	2-3	5	3
9_{10}	4-5	2	4-5	2-3	2-4	3-4	3-5	1-3	4-5	2-3
9_{10}^*	2-3	3-4	2-3	3-4	2-3	2-3	1-3	3-5	1-3	2-4
9_{11}	4	**1**	4	2	2-3	3-4	3-4	1-3	4	2-3
9_{11}^*	2	3	2	3	2	2	1-3	3-4	1-3	2-4
9_{12}	**1**	2	2-3	2	2	2-3	2	2	2-3	2-3
9_{12}^*	3	2	3	2	2	2-3	2-3	2-3	3	2-3
9_{13}	4-5	2	4-5	2	2-4	3-4	3-5	2-3	4-5	2-3
9_{13}^*	2	3-4	2	3-4	2-3	2	2-3	3-5	2-3	2-4
9_{14}	2-3	2	2-3	**1**	2	2-3	2-3	2	2-3	1-2
9_{14}^*	2	2	2	2	2	2	2	2	2	1-3
9_{15}	3	2	3-4	2	2	2-4	2-3	2-3	3	1-3
9_{15}^*	2	2-3	2	2-3	2	2	2-3	2-3	1-3	1-3
9_{17}	2	2-3	2-4	2	2	2-3	2-3	2-3	1-2	1-2
9_{17}^*	3	2-3	3-4	2	2	2-3	2-3	2-3	3	1-3
9_{18}	2	3	2	3	2-3	2	2-3	3-4	2-3	2-4
9_{18}^*	4	2	4	2	2-3	3-4	3-4	2-3	4	2-3
9_{19}	2-3	2	2-3	2	2	2-3	2	2	2-3	1-3
9_{19}^*	2-3	2	2-3	2	2	2-3	2-3	2-3	2-3	1-3
9_{20}	0	3	2	3	2	2	2	**3**	2	2
9_{20}^*	4	2	4	2	2	3	3-4	2	4	2
9_{21}	3	0	3	2	2	2-3	2-3	2	3	2
9_{21}^*	2	2	2	2	2	2	2	2-3	1-2	2-3
9_{23}	2	3	0	3	2-3	2	1-3	3-4	2-3	2-4
9_{23}^*	4	2	4	2	2-3	3-4	3-4	1-3	4	2-3
9_{26}	3	2	3	0	2	2-3	2-3	2	3	2
9_{26}^*	2	2	2	2	2	2	2	2-3	1-2	2
9_{27}	2	2	2-3	2	0	2	2	2-3	2	1-3
9_{27}^*	2	2	2-3	2	2	2	2-3	2	2	1-2
9_{31}	2	2-3	2	2-3	2	0	2	2-3	1-2	1-3
9_{31}^*	3	2	3-4	2	2	2	2-3	2	3	1-2
$3_1 \# 6_1$	2	2-3	1-3	2-3	2	2	0	2	**1**	1-3
$3_1^* \# 6_1^*$	3-4	2	3-4	2	2-3	2-3	2-**3**	1-2	3-4	1-2
$3_1 \# 6_1^*$	2	2-3	1-3	2-3	2	2	**1**	2-**3**	1-2	1-3
$3_1^* \# 6_1$	**3**	2	3-4	2	2-3	2-3	2	0	**3**	**1**
$3_1 \# 6_2$	2	3	2-3	3	2	1-2	**1**	**3**	0	2
$3_1^* \# 6_2^*$	4	1-2	4	1-2	2	3	3-4	1-2	4	2
$3_1 \# 6_2^*$	2	2-3	2-3	2	1-2	1-2	1-2	1-3	2	1-3
$3_1^* \# 6_2$	2	2	2-4	2	1-3	1-3	1-3	**1**	2	0
$3_1 \# 6_3$	2	2-3	2-3	2-3	1-2	2	1-2	2-3	2	2-3
$3_1^* \# 6_3$	3	1-2	3-4	2	1-2	2	2-3	1-2	3	2
$3_1 \# 3_1 \# 3_1$	2-3	4	2-4	4	3	2-3	2-3	4-5	1-2	3-4
$3_1^* \# 3_1^* \# 3_1^*$	5	2-3	5	2-3	3-4	4	4-5	2-3	5	3
$3_1 \# 3_1^* \# 3_1^*$	3	2-3	3-4	2-3	2-3	2-3	2-3	1-3	3	1-3
$3_1 \# 3_1 \# 3_1^*$	2-3	2-3	2-4	2-3	2-3	2-3	1-3	2-3	1-2	1-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 6_3$	$3_1 \# 3_1 \# 3_1$	$3_1 \# 3_1^* \# 3_1^*$	$4_1 \# 5_1$	$4_1 \# 5_2$	10_1	10_2
9_8^*	2-3	4-5	2-3	**3**	2	2-3	4
9_9	2-3	2-4	4	2-3	2-3	3-4	2
9_9^*	4	6	2-4	5-6	4-5	3-4	6
9_{10}	3-4	5-6	2-4	4-6	3-5	2-4	5-6
9_{10}^*	2-3	2-4	3-4	2-3	2-3	2-4	2-3
9_{11}	3-4	5	2-4	**4**	3	2-3	5
9_{11}^*	2-3	2-4	3-4	2	2	2-3	2
9_{12}	1-3	2-4	2-4	1-4	1-3	2	2-4
9_{12}^*	2-3	4	2-4	3-4	2-3	2	4
9_{13}	3-4	5-6	2-4	4-6	3-5	2-4	5-6
9_{13}^*	2-3	2-4	3-4	2	1-3	2-4	2
9_{14}	2-3	3-4	2-3	2-4	2-3	2	3-4
9_{14}^*	2	3	2-3	2-3	2	2	3
9_{15}	2-4	4-5	2-4	**3**	2	2-3	4
9_{15}^*	1-3	2-4	2-4	2-**3**	2	2-3	2-**3**
9_{17}	1-3	2-4	2-4	2-**3**	2	2-3	2-3
9_{17}^*	2-3	4	2-4	**3**	2	2-3	4
9_{18}	2-3	2-4	3-4	2-3	2	2-3	2-3
9_{18}^*	3-4	5	2-4	4-5	3-4	2-3	5
9_{19}	2-3	3-4	2-4	2-**3**	2	2	3-4
9_{19}^*	2-3	3-4	2-4	2-**3**	2	2	3-4
9_{20}	2	2-3	3	2-3	2	2-3	2-3
9_{20}^*	3	5	2-3	**4**	3	2-3	5
9_{21}	2-3	4	2-3	3-4	2-3	2	4
9_{21}^*	1-2	2-3	2-3	2-3	1-2	2	2-3
9_{23}	2-3	2-4	3-4	1-2	1-2	2-3	2
9_{23}^*	3-4	5	2-4	4-5	3-4	2-3	5
9_{26}	2-3	4	2-3	3-4	2-3	2	4
9_{26}^*	2	2-3	2-3	2	1-2	2	2
9_{27}	1-2	3	2-3	2-3	2	2	3
9_{27}^*	1-2	3-4	2-3	2-**3**	2	2	3
9_{31}	2	2-3	2-3	1-2	1-2	2-3	2
9_{31}^*	2	4	2-3	3-4	2-4	2-3	4
$3_1 \# 6_1$	1-2	2-3	2-3	2-3	2-3	2-3	2-3
$3_1^* \# 6_1^*$	2-3	4-5	1-3	3-**4**	2-3	2-3	4-5
$3_1 \# 6_1^*$	1-2	2-3	2-3	2-3	2-3	2-3	2-3
$3_1^* \# 6_1$	2-3	4-5	1-3	3-**4**	2-3	2-3	4
$3_1 \# 6_2$	2	1-2	3	2-3	2-3	2-3	1-3
$3_1^* \# 6_2^*$	3	5	1-2	**4**	3	2-3	5
$3_1 \# 6_2^*$	2	3	1-2	2-3	1-3	1-3	3
$3_1^* \# 6_2$	2-3	3-4	1-3	2-4	1-3	1-3	3
$3_1 \# 6_3$	0	2	2	2-3	2-3	2-3	2-3
$3_1^* \# 6_3$	2	4	1-2	3-4	2-4	2-3	4
$3_1 \# 3_1 \# 3_1$	2	0	4	2-4	2-4	3-4	2-4
$3_1^* \# 3_1^* \# 3_1^*$	4	6	2	5-6	4-5	3-4	6
$3_1 \# 3_1^* \# 3_1^*$	2	4	0	3-4	2-4	2-4	4
$3_1 \# 3_1 \# 3_1^*$	1-2	2	2	2-4	1-4	2-4	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	0_1	3_1	4_1	5_1	5_2	6_1	6_2	6_3	$3_1 \# 3_1$	$3_1 \# 3_1^*$	7_1	7_2	7_3	7_4
$4_1 \# 5_1$	2-3	2	**2**	1	**2**	2-**3**	2-3	2-3	2-3	2-3	2	2-3	4-5	3-5
$4_1 \# 5_1^*$	2-3	3-4	**2**	4-5	3-4	2-**3**	**3**	2-3	4-5	2-3	5-6	3-4	2	1-3
$4_1 \# 5_2$	2	1-2	1	1-**2**	1	2	2	1-3	2-3	2-3	2-3	2	3-4	2-4
$4_1 \# 5_2^*$	2	2-3	1	3-4	2-3	2	2	1-3	3-4	2-3	4-5	2-3	2	1-2
10_1	1	2	2	2-3	2	2	2	2	2-3	2-3	3-4	2	2-3	2-3
10_1^*	1	2	2	2-3	2	2	2	2	2-3	2-3	3-4	2	2-3	2-3
10_2	3	2	3	1	**2**	3	2	3	2-3	3	1	2-3	5	4-5
10_2^*	3	4	3	5	4	3-4	4	3	5	3	6	4	2	2-3
10_3	2	2-3	2-3	2-4	2-3	2	2-3	2-3	2-4	2-4	3-5	2-3	2-4	2-4
10_3^*	2	2-3	2-3	2-4	2-3	2	2-3	2-3	2-4	2-4	3-5	2-3	2-4	2-4
10_4	2	2-3	2	2-4	2-3	**2**	2	2-3	1-4	1-4	2-5	2-3	3-4	2-4
10_4^*	2	2-3	2	3-4	2-3	1	**2**	2-3	3-4	1-4	4-5	2-3	2-4	2-4
10_5	2	3	2-3	4	3	2-3	3	2	4	2	5	3	2	2
10_5^*	2	1	2-3	1	2	2-3	2	2	1-2	2	1	2-3	4	3-4
10_6	2-3	2	2-3	1	**2**	2	2	2-3	2-3	2-3	2	2-3	4-5	3-5
10_6^*	2-3	3-4	2-3	4-5	3-4	2-3	3-4	2-3	4-5	2-3	5-6	3-4	2	2-3
10_7	1	2	2	2-3	2	2	2	2	2-3	2-3	2-3	1	3	2-3
10_7^*	1	2	2	3	2	2	2	2	3	2-3	4	2	**2**	2-3
10_8	2	2	2	2	2-3	**2**	1	2-3	2-3	2-3	2-3	2-3	4	3-4
10_8^*	2	3	2	4	3	2	3	2-3	4	2-3	5	3	2-3	2-3
10_9	1	2	2	3	2	2	2	2	3	1-2	4	2	2-3	2
10_9^*	1	1	2	2	2	2	2	2	1-2	1-2	2-3	2	3	2-3
10_{10}	1	2	1	2-3	2	2	2	2	2-3	1-3	3-4	2	**2**	2-3
10_{10}^*	1	2	1	2-3	2	1	2	2	2-3	1-3	3	1	2-3	2-3
10_{11}	2-3	2	2	2-3	2-3	2	2	2-3	2-3	2-3	2-4	2-4	3-5	2-5
10_{11}^*	2-3	2-4	2	3-5	2-4	2	2-3	2-3	3-5	2-3	4-6	2-4	2-4	2-3
10_{12}	2	2	2-3	3	2-3	2-3	2-3	2	3	2-3	4	2-3	1	**2**
10_{12}^*	2	2	2-3	1	2	2-3	2-3	2	2-3	2-3	2	**2**	3-4	2-3
10_{13}	2	2-3	2	2-4	2-3	1	**2**	2-3	2-4	2-4	3-5	2-3	2-4	2-4
10_{13}^*	2	2-3	2	2-4	2-3	2	2-3	2-3	2-4	2-4	3-5	2-3	2-4	2-4
10_{14}	2	1	2	1	2	2-3	2	2	1-2	2	2	**2**	4	3-4
10_{14}^*	2	3	2	4	3	2-3	3	2	4	2	5	3	1	2
10_{15}	2	2	2-3	3	2	2-3	2-3	1	3	2-3	4	2-3	2	2-3
10_{15}^*	2	2	2-3	1	**2**	2-3	2-3	1	2-3	2-3	2	2-3	3	2-3
10_{16}	2	2-3	2	3-4	2-3	2	2-3	2-3	3-4	2-4	4-5	2-3	2-3	2-3
10_{16}^*	2	2-3	2	2-**3**	2	1	2	2-3	2-4	2-4	2-4	2-3	3-4	2-4
10_{17}	1	2	2	2	2	2	2	2	2-3	2-3	3	2	2-3	2-3
10_{18}	1	2	1	2-3	2	2	2	2	2-3	2-3	2-4	2	3	2-3
10_{18}^*	1	2	1	3	2	1	2	2	3	2-3	4	2	2-3	2-3
10_{19}	2	1	1	2	2	2	1	2	2	2	2-3	2-3	3	2-3
10_{19}^*	2	2-3	1	**3**	2	2	2	2	3-4	2	4	2-3	2-3	2
10_{20}	2	1	2-3	2	2	2	2	2	2	2	2-3	2-3	3-4	2-4
10_{20}^*	2	2-3	2-3	3-4	2-3	2-3	2-3	2	3-4	2	4-5	2-3	2-3	2
10_{21}	2	2	2-3	2	1	2	2	2-3	2-3	2-3	**2**	2	4	3-4
10_{21}^*	2	3	2-3	4	3	2-3	3	2-3	4	2-3	5	3	1	2
10_{22}	2	2-3	2	2-4	2-3	2-3	2	2-3	2-4	2-3	3-5	2-3	2-4	2-3
10_{22}^*	2	2	2	2-3	2-3	2	1	2-3	2-3	2-3	3-4	2-3	2-4	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	7_5	7_6	7_7	$3_1 \# 4_1$	8_1	8_2	8_3	8_4	8_5	8_6	8_7	8_8	8_9	8_{10}	8_{11}
$4_1 \# 5_1$	2	2-3	2-**3**	1-3	2-4	2	2-**4**	2-**3**	**4**	2-3	3-4	2-3	2-4	3-4	2-**3**
$4_1 \# 5_1^*$	4-5	**3**	2-3	**3**	2-4	**4**	2-**4**	**3**	2-4	3-**4**	2	2-3	2-4	2	3-4
$4_1 \# 5_2$	2	2	2	1-2	1-3	2-3	1-3	2	3	1-3	2-3	2-3	2-3	2-4	1-2
$4_1 \# 5_2^*$	3-4	2	2	2	1-3	3	1-3	2	2-3	2-3	1-3	2	2-3	1-2	2-3
10_1	2-3	2	2	1-3	1	2-3	**2**	2-3	2-3	**2**	2	2-3	2	2-3	2
10_1^*	2-3	2	2	1-3	2	2-3	**2**	2-3	2-3	2-3	2	2-3	2	2-3	2
10_2	2	2-3	3-4	2-3	**3**	1	3-4	2-3	5	**2**	4	3	3	4	**2**
10_2^*	5	4	3	4	3-4	5	3-4	4	1-3	4-5	2	3	3	2	4
10_3	2-4	2-3	2-3	2-4	1	2-**3**	1	**2**	2-4	**2**	2-3	2-4	2-3	1-4	**2**
10_3^*	2-4	2-3	2-3	2-4	**2**	2-4	1	**2**	2-4	2-3	2-3	2-4	2-3	1-4	2-3
10_4	2-4	2-3	2-3	2-3	2-3	2-3	2	1	**3**	**2**	2-3	2-4	**2**	2-4	2-3
10_4^*	3-4	2-3	2-3	2-3	1	3	2	2-3	2-3	2	2-3	2-4	**2**	1-4	2
10_5	4	3	2	3-4	2-3	4	2-4	3-4	1-3	3-4	1	2	2-3	1-2	3
10_5^*	2	2	2-3	1-2	2-3	2	2-4	2-3	4	2	3	2	2-3	3	2-3
10_6	2	2-3	2-4	1-3	**2**	1	2-3	**2**	4-5	1	3-4	2-3	2-3	3-4	**2**
10_6^*	4-5	3-4	2-3	3-4	2-4	4-5	2-3	3	2-3	3-4	2	2-3	2-3	2	3-4
10_7	**2**	2	2	1-3	1	**2**	**2**	2-3	3	**2**	2	2-3	2	2-3	1
10_7^*	3	2	2	2-3	2	3	**2**	2-3	1-3	2-3	2	2-3	2	1-3	2
10_8	2-3	2-3	2-3	2-3	2-3	1	**2**	1	4	2	3	2-3	2	3-4	2
10_8^*	4	3	2-3	3	2-3	4	**2**	3	1-2	3	2-3	2-3	2	1-3	3
10_9	3	2	2	2-3	2	3	2-3	**2**	2-3	2-3	2	2	1	1-3	2
10_9^*	2	2	2	2	2	1	2-3	**2**	3	2	2	2	1	2-3	2
10_{10}	2-3	2	2	2	2	2-3	2	2	2-3	2-3	2	2-3	2	2-3	2
10_{10}^*	**2**	2	2	2	2	2-3	2	2	2-3	2	2	2-3	2	2-3	2
10_{11}	2-3	2-3	2-3	1-3	**2**	**2**	1	1	3-4	1	2-4	2-3	**2**	2-4	2-3
10_{11}^*	3-5	2-3	2-3	2-3	**2**	3-4	1	**2**	1-3	2-3	2-3	2-3	**2**	1-4	2-3
10_{12}	3	2-3	2-3	2-3	2-3	3	2-4	2-4	1-4	2-3	1	1	2-3	1-2	2-3
10_{12}^*	2	2-3	2-3	1-3	2-3	2	2-4	2-4	3-4	2-3	2-3	**2**	2-3	2-3	2-3
10_{13}	2-4	2-3	2-3	1-3	1	2-3	1	**2**	2-4	2	2-3	2-4	2-3	2-4	2
10_{13}^*	2-4	2-3	2-3	1-3	**2**	2-4	1	2	2-**3**	2-3	2-3	2-4	2-3	2-4	2-3
10_{14}	2	2	2-3	1-2	2-3	1	2-4	2-3	4	2	3	2	2-3	3	**2**
10_{14}^*	4	3	2	3	2-3	4	2-4	3	1-3	3-4	2	2	2-3	1-2	3
10_{15}	3	2-3	2-3	2-3	2-3	3	2-4	2-4	1-4	2-3	1	2	2-3	1-2	2-3
10_{15}^*	2	2-3	2-3	1-3	2-3	2	2-4	2-4	3-4	2-3	2	1	2-3	2	2-3
10_{16}	3-4	2-3	2-3	2-3	**2**	3-4	1	2	1-3	2-3	2-3	2-3	**2**	1-3	2-3
10_{16}^*	2-3	2-3	2-3	1-3	2	**2**	1	1	3-4	2	2-3	2-4	**2**	2-4	1
10_{17}	2-3	2	2	2-3	2	2-3	2-3	2-3	2-3	2-3	1	**2**	2	2-3	2
10_{18}	2-3	2	2	1-2	2	**2**	2	1	3	**2**	2	2-3	2	2-3	2
10_{18}^*	3	2	2	2	2	3	2	2	1-3	2	2	2-3	2	2-3	2
10_{19}	2	2	2	2	2-3	2	2-3	2	3	2	**2**	2	2	2-3	2
10_{19}^*	3	2	2	2	2-3	3	2-3	2	2	2-3	1	2	2	1-3	2-3
10_{20}	2	2	2-3	1-2	1	2	**2**	**2**	3-4	1	2-3	2	2-3	2-3	**2**
10_{20}^*	3-4	2-3	2	2-4	2-3	3-4	**2**	2-3	2-3	2-4	2	2	2-3	1-3	2-3
10_{21}	2	2	2-3	2-3	**2**	1	2-3	2-3	4	**2**	3	2-3	2-3	3-4	1
10_{21}^*	4	3	2-3	3-4	2-3	4	2-3	3	2-3	3-4	2-3	2	2-3	1-2	3
10_{22}	2-4	2-3	2-3	2-3	2-3	2-3	**2**	1	2	**2**	2-3	2-3	1	1-4	2-3
10_{22}^*	2-3	2-3	2-3	2-3	**2**	2	**2**	2	2-3	1	2-3	2-3	1	1-4	2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	8_{12}	8_{13}	8_{14}	8_{15}	8_{16}	8_{17}	8_{18}	8_{19}	8_{20}	8_{21}	$3_1 \# 5_1$	$3_1^* \# 5_1$
$4_1 \# 5_1$	2-**3**	2-**3**	2-3	2	1-3	2-3	2-3	5-6	2-**3**	1-4	1-2	1-2
$4_1 \# 5_1^*$	2-**3**	2-**3**	**3**	4-5	**3**	2-3	2-3	2	2-4	3-4	5-6	3-**4**
$4_1 \# 5_2$	2	2	2	1-2	1-2	1-3	1-3	4-5	2	1-3	2-**3**	1-**3**
$4_1 \# 5_2^*$	2	2	2	3-4	2	1-3	1-3	2-**3**	2-3	2-3	4-5	2-**4**
10_1	**2**	2	2	2-3	1-3	2	2-3	3-4	1-2	1-2	3-4	2-4
10_1^*	**2**	2	2	2-3	1-3	2	2-3	3-4	1-2	1-2	3-4	2-4
10_2	3-4	**3**	**2**	1-2	2-3	3	3	6	**3**	2-3	2	2
10_2^*	3-4	3-4	4	5	4	3	3	1-2	3-4	4	6	**4**
10_3	**2**	2-3	2-3	2-4	2-4	1-3	2-4	3-5	2-3	2-3	3-5	2-5
10_3^*	**2**	2-3	2-3	2-4	2-4	1-3	2-4	3-5	2-3	2-3	3-5	2-5
10_4	2	2-3	2-3	2-4	1-3	1-3	1-4	4-5	1-3	2-3	2-5	2-5
10_4^*	2	2-3	2-3	3-4	2-3	1-3	1-4	2-5	1-3	2-3	4-5	2-5
10_5	2-4	2-3	3	4	3	2	2	1-2	2-3	3	5	**3**
10_5^*	2-4	**2**	2	1-2	2	2	2	5	2-3	1-3	2	2
10_6	2-3	2-**3**	**2**	2	1-3	2-3	2-3	5-6	2-**3**	1-3	2	2
10_6^*	2-3	2-4	3-4	4-5	3-4	2-3	2-3	2	2-4	3-4	5-6	3-**4**
10_7	**2**	2	2	1-3	1-3	1-2	1-3	4	1-2	1-2	2-4	2-4
10_7^*	**2**	2	2	3	2-3	1-2	1-3	2-4	1-2	2	4	2-4
10_8	2-3	2-3	2	2-3	2-3	2-3	2-3	5	2-3	1-2	1-3	1-3
10_8^*	2-3	2-3	3	4	3	2	2-3	1-3	2-3	3	5	3-**4**
10_9	2-3	2	2	3	2-3	2	2	2-3	1-2	2	4	2-**3**
10_9^*	2-3	2	2	2-3	1-2	2	2	4	1-2	2	2-3	2-3
10_{10}	2	2	2	2-3	1-2	2	1-3	3-4	1-2	2	3-4	2-4
10_{10}^*	2	1	2	2-3	1-2	2	1-3	3-4	1-2	2	3-4	2-4
10_{11}	2-3	2-3	2-3	1-4	1-3	1-3	1-3	4-6	1-4	1-3	2-4	2-4
10_{11}^*	2-3	2-3	2-3	3-5	2-3	1-3	1-3	2-4	1-4	2-4	4-6	2-**4**
10_{12}	2-4	2-3	2-3	3-4	2-3	1-3	1-3	2	1-3	2-3	4	2-4
10_{12}^*	2-4	**2**	2-3	1-2	1-3	1-3	1-3	4	1-3	1-3	2	2
10_{13}	1	2-3	2-3	2-4	2-3	1-3	2-4	3-5	1-3	1-3	3-5	2-5
10_{13}^*	1	2-3	2-3	2-4	2-3	1-3	2-4	3-5	1-3	1-3	3-5	2-5
10_{14}	2-3	2-3	1	1-2	1-2	2	2	5	2-3	1-3	2	2
10_{14}^*	2-3	2-3	3	4	3	2	2	1-2	2-3	3	5	**3**
10_{15}	2-4	2	2-3	3	2	1-3	1-3	2	1-2	2-3	4	2-4
10_{15}^*	2-4	2	2-3	1-2	1-2	1-3	1-3	4	1-2	1-3	2	2
10_{16}	2	2-3	2-3	3-4	2-3	1-3	1-4	2-**4**	1-3	2-3	4-5	2-5
10_{16}^*	2	2-3	2-3	1-3	1-3	1-3	1-4	4-5	1-3	1-3	2-**4**	2-**4**
10_{17}	2-3	2	2	2-3	2-3	1-2	1-3	3	1-2	2	3	2-3
10_{18}	2	2	1	2-3	1-2	2	1-3	4	1-2	1-2	2-4	1-4
10_{18}^*	2	2	2	3	2	2	1-3	2-4	1-2	2	4	2-4
10_{19}	2	2	2	2-3	2	1-2	1-2	**4**	2-3	2	2-3	2-3
10_{19}^*	2	1	2	3	2	1-2	1-2	2-3	2-3	2-3	**4**	2-**3**
10_{20}	**2**	2-3	2	1-3	1-2	1-2	1-2	4-5	2-3	1-3	2-3	1-3
10_{20}^*	**2**	2-3	2-3	3-4	2-3	1-2	1-2	2-3	2-3	2-3	4-5	2-**3**
10_{21}	2-3	2	2	2	1-2	2-3	2-3	5	2	2-3	2-3	2-3
10_{21}^*	2-3	2-3	3	4	3-4	2-3	2-3	2-3	2-3	3	5	3-**4**
10_{22}	2-3	2-3	2-3	2-4	2-3	1-2	1-3	3-4	1-3	1-3	3-5	1-**4**
10_{22}^*	2-3	2-3	2	2-4	2-3	1-3	1-3	3-5	1-3	1-2	3-4	1-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 5_2$	$3_1^* \# 5_2$	$4_1 \# 4_1$	9_1	9_2	9_3	9_4	9_5	9_6	9_7	9_8	9_9	9_{10}
$4_1 \# 5_1$	2-3	2-**3**	2-**3**	2-3	1-4	5-6	2-3	3-5	2	2-3	2-3	2-3	4-6
$4_1 \# 5_1^*$	4-5	2-3	2-**3**	6-7	3-4	2-3	4-5	2-3	5-6	4-5	**3**	5-6	2-3
$4_1 \# 5_2$	2	2	1-2	3-4	1-3	4-5	2-3	2-4	2-3	2-3	2	2-3	3-5
$4_1 \# 5_2^*$	3-4	2-3	1-2	5-6	2-3	2-3	3-4	1-2	4-5	3-4	2	4-5	2-3
10_1	2-3	1-3	2-3	4-5	2	3-4	2-3	2-3	3-4	2-3	2-3	3-4	2-4
10_1^*	2-3	1-3	2-3	4-5	2	3-4	2-3	2-3	3-4	2-3	2-3	3-4	2-4
10_2	1-3	**3**	3-4	2	2-4	6	2-3	4-5	2	2-3	2-3	2	5-6
10_2^*	5	3	3-4	7	4	2	5	2-3	6	5	4	6	2-3
10_3	2-4	2-4	1-4	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2-3	3-5	2-5
10_3^*	2-4	2-4	1-4	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2-3	3-5	2-5
10_4	2-4	2-4	2-3	3-6	2-3	4-5	2-4	2-4	2-5	2-4	2	2-5	3-5
10_4^*	3-4	2-4	2-3	5-6	2-3	2-5	3-4	2-4	4-5	3-4	2-3	4-5	2-5
10_5	4	2	2-4	6	3	2	4	2-3	5	4	3-4	5	2-3
10_5^*	1-2	2-3	2-4	2	2-3	5	2-3	3-4	2	2	2	2	4-5
10_6	2-3	2-**3**	2-4	2-3	2-4	5-6	2-3	3-5	2	2-3	2-3	2-3	4-6
10_6^*	4-5	2-3	2-4	6-7	3-4	2-3	4-5	2-3	5-6	4-5	3	5-6	2-3
10_7	2-3	1-3	2-3	3-4	2	4	2	2-3	2-3	2	2-3	2-**3**	3-4
10_7^*	3	1-3	2-3	5	2	2-3	3	2	4	3	2-3	4	2-3
10_8	1-3	2-4	2-3	2-4	2-3	5	2-4	3-4	2-3	2-3	2-3	2-4	4-5
10_8^*	4	2-3	2-3	6	3	2-4	4	2-4	5	4	3	5	2-4
10_9	3	2	2-3	5	2	2-4	3	2-3	4	3	2-3	4	2-3
10_9^*	2	2-3	2-3	3-4	2	4	2-3	2-3	2-3	2	2	2-3	3-4
10_{10}	2-3	2-3	1-2	4-5	2	3	2-3	2	3-4	2-3	2	3-4	2-3
10_{10}^*	2-3	2-3	1-2	4	2	3-4	2	2-3	3	2	2	**3**	2-4
10_{11}	2-3	1-4	2-3	3-5	2-4	4-6	2-5	2-5	2-4	2-3	2-3	2-4	3-6
10_{11}^*	3-5	1-3	2-3	5-7	2-4	2-5	3-5	2-4	4-6	3-5	2-3	4-6	2-4
10_{12}	3	1-3	2-4	5	2-3	2	3-4	2-3	4	3	2-3	4	2
10_{12}^*	2-3	1-3	2-4	3	2-3	4-5	2	2-4	2	2-3	2-3	2	3-4
10_{13}	2-4	2-4	2-3	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2-3	3-5	2-5
10_{13}^*	2-4	2-4	2-3	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2	3-5	2-5
10_{14}	1-2	2-3	2-3	2-3	2-3	5	2	3-4	2	2	2	2	4-5
10_{14}^*	4	2	2-3	6	3	2	4	2-3	5	4	3	5	2
10_{15}	3	1-3	2-4	5	2-3	2-3	3-4	2-3	4	3	2-3	4	2-3
10_{15}^*	2-3	1-3	2-4	3	2-3	4	2-3	2-3	2	2-3	2-3	2-3	3-4
10_{16}	3-4	1-4	2-3	5-6	2-3	2-4	3-4	2-3	4-5	3-4	2	4-5	2-4
10_{16}^*	2-3	1-3	2-3	3-5	2-3	4-5	2-4	2-4	2-4	2-4	2-3	2-4	3-5
10_{17}	2-3	1-3	2-3	4	2	3-4	2-3	2-3	3	2-3	2-3	3-4	2-4
10_{18}	1-3	2-3	1-2	3-5	2	4	2-3	2-3	2-4	2-3	2	2-4	3-4
10_{18}^*	3	2-3	1-2	5	2	2-4	3	2-3	4	3	2	4	2-4
10_{19}	2	2-3	2	3-4	2-3	4	2-4	2-3	2-3	2	2	2-3	3-4
10_{19}^*	3	2	2	5	2-3	2-4	3-4	2-3	4	3-4	2	4	2-3
10_{20}	2	2-3	1-4	3-4	2-3	4-5	2-4	2-4	2-3	2	2	2-3	3-5
10_{20}^*	3-4	2	1-4	5-6	2-3	2-4	3-4	2-3	4-5	3-4	2-3	4-5	2-3
10_{21}	2	2	2-4	2-3	2-3	5	2	3-4	2-3	2-3	2-3	2	4-5
10_{21}^*	4	2-3	2-4	6	3	2	4	2	5	4	3	5	2
10_{22}	2-4	2-3	2-3	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2-3	3-5	2-4
10_{22}^*	2-3	2-4	2-3	4-5	2-3	3-5	2-4	2-4	3-4	2-3	2-3	3-4	2-5

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	9_{11}	9_{12}	9_{13}	9_{14}	9_{15}	9_{17}	9_{18}	9_{19}	9_{20}	9_{21}	9_{23}	9_{26}	9_{27}	9_{31}
$4_1 \# 5_1$	**4**	1-4	4-6	2-4	**3**	2-**3**	2-3	2-**3**	2-3	3-4	1-2	3-4	2-3	1-2
$4_1 \# 5_1^*$	2	3-4	2	2-3	2-**3**	**3**	4-5	2-**3**	**4**	2-3	4-5	2	2-**3**	3-4
$4_1 \# 5_2$	3	1-3	3-5	2-3	2	2	2	2	2	2-3	1-2	2-3	2	1-2
$4_1 \# 5_2^*$	2	2-3	1-3	2	2	2	3-4	2	3	1-2	3-4	1-2	2	2-4
10_1	2-3	2	2-4	2	2-3	2-3	2-3	2	2-3	2	2-3	2	2	2-3
10_1^*	2-3	2	2-4	2	2-3	2-3	2-3	2	2-3	2	2-3	2	2	2-3
10_2	5	2-4	5-6	3-4	4	2-3	2-3	3-4	2-3	4	2	4	3	2
10_2^*	2	4	2	3	2-**3**	4	5	3-4	5	2-3	5	2	3	4
10_3	2-4	2-3	2-5	2-3	2-4	2-4	2-4	2-3	2-4	2-3	2-4	2-3	2-3	2-4
10_3^*	2-4	2-3	2-5	2-3	2-4	2-4	2-4	2-3	2-4	2-3	2-4	2-3	2-3	2-4
10_4	3-4	2-3	3-5	2	2-3	2-3	2-4	2-3	2-3	2-3	2-4	2-3	2-3	2-4
10_4^*	2-4	2	2-5	2-3	2-3	2-3	3-4	2	**3**	2-3	3-4	2-3	2-3	2-4
10_5	2	3	2	2	2-3	3	4	2-3	4	2	4	2	2-3	3
10_5^*	4	2-3	4-5	2-3	3-4	2-3	2-3	2-3	2	3	2	3	2	2
10_6	4-5	2-3	4-6	2-4	3-4	2-3	2-3	2-3	2-3	3-4	2	3-4	2-3	2
10_6^*	2	3-4	2	2-3	2-**3**	3-4	4-5	2-4	4-5	2-3	4-5	2	2-3	3-4
10_7	3	2	3-4	2	2-3	2-3	2	2	2-3	2	2-3	2	2	2-3
10_7^*	2-3	2	2-**3**	2	2	2-3	3	2	3	2	3	2	2	2-3
10_8	4	2-3	4-5	2-3	3	2	2-4	2-3	2	3	2-3	3	2-3	2-3
10_8^*	2-3	3	2-3	2-3	2-3	3	4	2-3	4	2-3	4	2	2	3-4
10_9	2-3	2	2-3	2	2-3	2-3	3	2	3	2	3	2	2	2-3
10_9^*	3	2	3-4	2	2-3	2-3	2-3	2	2	2	2-3	2	2	2
10_{10}	2-3	2	2-**3**	2	2	2	2-3	2	2-3	2	2-3	2	2	2-3
10_{10}^*	2-3	2	2-4	2	2	2	2	2	2-3	2	2-3	2	2	2-3
10_{11}	3-4	2-3	3-6	2-3	2-3	2-3	2-4	2-3	2-3	2-4	2-4	2-4	2-3	2-3
10_{11}^*	2-4	2-3	2-4	2-3	2-3	2-3	3-5	2-3	3-4	2-3	3-5	2-3	2-3	2-4
10_{12}	2	2-3	2	2-3	2-3	2-4	3-4	2-3	3	2-3	3-4	2	2-3	2-3
10_{12}^*	3-4	2-3	3-4	2-3	2-4	2-4	2	2-3	2-3	2-3	2	2-3	2-3	2
10_{13}	2-4	2	2-5	2-3	2-3	2-3	2-4	2	2-**3**	2-3	2-4	2-3	2-3	2-4
10_{13}^*	2-4	2-3	2-5	2	2-3	2-3	2-4	2-3	2-4	2-3	2-4	2-3	2-3	2-4
10_{14}	4	2-3	4-5	2-3	3	2-3	2	2-3	2	3	2	3	2	2
10_{14}^*	2	3	2	2	2-3	3	4	2-3	4	2	4	2	2-3	3
10_{15}	2	2-3	2	2-3	2-**3**	2-4	3	2-3	3	2-3	3	2	2	2
10_{15}^*	3	2-3	3-4	2-3	2-3	2-4	2-3	2-3	2-3	2-3	2	2-3	2	2
10_{16}	2-3	2-3	2-4	2	2-3	2-3	3-4	2-3	3-4	2-3	3-4	2-3	2-3	2-4
10_{16}^*	3-4	2	3-5	2-3	2-3	2-3	2-3	2	2-3	2-3	2-3	2-3	2-3	2-3
10_{17}	2-3	2	2-3	2	2-3	2-3	2-3	2	2-3	2	2-3	2	2	2-3
10_{18}	3	2	3-4	2	2	2	2-3	2	2-3	2	2-3	2	2	2-3
10_{18}^*	2-3	2	2-4	2	2	2	3	2	3	2	3	2	2	2-3
10_{19}	3	2-3	3-4	2-3	2	2	2-3	2	2	2-3	2-3	2-3	2	2
10_{19}^*	2-3	2-3	2-3	2	2	2	3	2	3	2	3	2	2	2-3
10_{20}	3-4	2-3	3-5	2-3	2-4	2-3	2-3	2-3	2	2-3	2-3	2-3	2	2
10_{20}^*	2-3	2-3	2-3	2	2-3	2-3	3-4	2-3	3-4	2	3-4	2	2-3	2-3
10_{21}	4	2-3	4-5	2-3	3-4	2-3	2	2-3	2	3	2	3	2-3	2
10_{21}^*	2	3	2	2	2	3-4	4	2-3	4	2	4	2	2-3	3-4
10_{22}	2-4	2-3	2-4	2-3	2-3	2-3	2-4	2-3	2-3	2-3	2-4	2	2	2-4
10_{22}^*	2-4	2-3	2-5	2-3	2-3	2	2-4	2-3	2	2-3	2-4	2-3	2-3	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 6_1$	$3_1^* \# 6_1$	$3_1 \# 6_2$	$3_1^* \# 6_2$	$3_1 \# 6_3$	$3_1 \# 3_1 \# 3_1$	$3_1 \# 3_1^* \# 3_1^*$
$4_1 \# 5_1$	2-3	3-**4**	2-3	2-4	2-3	2-4	3-4
$4_1 \# 5_1^*$	3-**4**	2-3	**4**	2-3	3-4	5-6	2-4
$4_1 \# 5_2$	2-3	2-3	2-3	1-3	2-3	2-4	2-4
$4_1 \# 5_2^*$	2-3	2-3	3	1-3	2-4	4-5	1-4
10_1	2-3	2-3	2-3	1-3	2-3	3-4	2-4
10_1^*	2-3	2-3	2-3	1-3	2-3	3-4	2-4
10_2	2-3	4	1-3	3	2-3	2-4	4
10_2^*	4-5	2-3	5	3	4	6	2-4
10_3	2-3	2-3	2-4	1-4	2-4	3-5	2-5
10_3^*	2-3	2-3	2-4	1-4	2-4	3-5	2-5
10_4	1-**3**	2-**3**	2-3	2-3	2-4	2-5	2-5
10_4^*	2	1-2	**3**	2-**3**	2-4	4-5	2-5
10_5	3-4	1-2	4	2	3	5	2-3
10_5^*	1-2	3-4	1-2	2-3	2	2-3	3
10_6	2-3	3	2-3	2-3	2-3	2-4	3-4
10_6^*	3-4	2-3	4-5	2-3	3-4	5-6	2-4
10_7	2-3	2-3	1-3	2-3	1-3	2-4	2-4
10_7^*	2-3	2-3	3	2-3	2-3	4	2-4
10_8	2-3	**3**	2	2	1-3	2-4	3-4
10_8^*	3	2-3	4	2-3	3-4	5	2-4
10_9	2-3	1-2	3	2	2-3	4	2-3
10_9^*	1-2	2-3	2	2-3	1-2	2-3	2-3
10_{10}	2-3	2-3	2-3	2-3	2-3	3-4	2-4
10_{10}^*	2	2	2-3	2-3	2-3	3-4	2-4
10_{11}	2-3	2-3	1-3	2-3	1-3	2-4	2-4
10_{11}^*	2-3	2-3	3-4	2-3	2-4	4-6	2-4
10_{12}	2-3	2-3	3	2-3	2-3	4	2-4
10_{12}^*	2-3	2-3	1-3	2-3	2-3	2-4	2-4
10_{13}	2	2	2-**3**	2-**3**	2-4	3-5	2-5
10_{13}^*	2-3	2-3	2-4	2-4	2-4	3-5	2-5
10_{14}	1-2	3-4	1-2	2-3	2	2-3	3
10_{14}^*	3-4	1-2	4	2	3	5	2-3
10_{15}	2-3	2-3	3	2-3	2	4	2-4
10_{15}^*	2-3	2-3	1-3	2-3	1-2	2-4	2-4
10_{16}	2-3	2-3	3-4	2-4	2-4	4-5	2-5
10_{16}^*	2	2	1-3	2-3	2-4	2-5	2-5
10_{17}	2-3	2-3	2-3	1-3	2-3	3-4	2-4
10_{18}	2-3	2-3	2-3	2-3	1-3	2-4	2-4
10_{18}^*	2	2	3	2-3	2-3	4	2-4
10_{19}	1-2	2-3	2	2	1-2	2-3	2-3
10_{19}^*	2-3	1-2	3	2	2-3	4-5	2-3
10_{20}	2	2-3	2	1-3	2	2-3	2-3
10_{20}^*	2-4	2	3-4	1-2	2-3	4-5	2-3
10_{21}	1-3	3	2-3	2-3	2-3	2-4	3-4
10_{21}^*	3-4	1-3	4	2-3	3-4	5	2-4
10_{22}	2-4	2-3	2-3	1-3	1-4	3-5	2-4
10_{22}^*	2-3	2-3	2	1-2	1-3	3-4	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$4_1 \# 5_1$	$4_1 \# 5_2$	10_1	10_2	10_3	10_4	10_5	10_6	10_7	10_8	10_9	10_{10}
$4_1 \# 5_1$	0	**1**	2-4	2	2-5	2-**4**	4-5	2	2-4	2-3	3-4	2-**3**
$4_1 \# 5_1^*$	**4**	**3**	2-4	**5**	2-5	3-**4**	2	4-**5**	3-4	**4**	2-3	2-**3**
$4_1 \# 5_2$	**1**	0	1-3	2-**3**	2-4	1-3	3-4	1-**3**	1-3	2-3	2-3	1-2
$4_1 \# 5_2^*$	**3**	2	1-3	4	2-4	2-3	2-3	3-4	2-3	3	2-3	1-2
10_1	2-4	1-3	0	**3**	**1**	2-3	2-3	**2**	**1**	2-3	2	2
10_1^*	2-4	1-3	2	3-4	**2**	2	2-3	2-4	2	2-3	2	2
10_2	2	2-**3**	**3**	0	3-**4**	2-4	5	**1**	**2**	2	4	3-4
10_2^*	**5**	4	3-4	6	3-5	4	2	5-6	4	5	2	3-4
10_3	2-5	2-4	**1**	3-**4**	0	**2**	2-4	2-**3**	2	**2**	2-3	2-3
10_3^*	2-5	2-4	**2**	3-5	**1**	**1**	2-4	2-4	2-3	2-**3**	2-3	2-3
10_4	2-**4**	1-3	2-3	2-4	**2**	0	3-4	2-**3**	2-3	2	**2**	2
10_4^*	3-**4**	2-3	2	4	**1**	2-**3**	2-4	3	2	**3**	2-3	2-3
10_5	4-5	3-4	2-3	5	2-4	3-4	0	4-5	3	4	2	**2**
10_5^*	2	2-3	2-3	2	2-4	2-4	4	2	2-3	2-3	3	2-3
10_6	2	1-**3**	**2**	**1**	2-**3**	2-**3**	4-5	0	2-**3**	**1**	3-4	2-4
10_6^*	4-**5**	3-4	2-4	5-6	2-4	3	2	4-5	3-4	4	2	2-3
10_7	2-4	1-3	**1**	**2**	2	2-3	3	2-**3**	0	2-3	2	2
10_7^*	3-4	2-3	2	4	2-3	2	2-3	3-4	2	3	2	2
10_8	2-3	2-3	2-3	2	**2**	2	4	**1**	2-3	0	3	2-3
10_8^*	**4**	3	2-3	5	2-**3**	**3**	2-3	4	3	4	**1**	2-3
10_9	3-4	2-3	2	4	2-3	**2**	2	3-4	2	3	0	2
10_9^*	2-3	2-3	2	2	2-3	2-3	3	2	2	**1**	2	2
10_{10}	2-**3**	1-2	2	3-4	2-3	2	**2**	2-4	2	2-3	2	0
10_{10}^*	2-**3**	1-2	2	3-4	2-3	2-3	2-3	2-3	2	2-3	2	2
10_{11}	2-4	1-3	**2**	2-**3**	**1**	**1**	3-5	2	2-**3**	**1**	2-**3**	2-3
10_{11}^*	3-**4**	2-3	2-**3**	4-5	2	**2**	2-3	3-4	2-**3**	**3**	**2**	2-3
10_{12}	3-4	2-4	2-3	4	2-4	2-4	**1**	3-4	2-3	3-4	2-3	2-3
10_{12}^*	2	1-3	2-3	2	2-4	2-4	3	2	2-3	2-3	2-3	2-3
10_{13}	2-**4**	2-3	**1**	3-4	2	**2**	2-4	2-3	2	2-**3**	2-3	2-3
10_{13}^*	2-**4**	2-3	**2**	3-5	**1**	2	2-4	2-4	2-3	2-3	2-3	2
10_{14}	2	1-3	2-3	**1**	2-4	2-4	4	2	2-3	2	3	2-3
10_{14}^*	**4**	3	2-3	5	2-4	3-4	2	4-5	3	4	2	2-3
10_{15}	3-4	2-3	2-3	4	2-4	2-4	2	3-4	2-3	3-4	2-3	2-3
10_{15}^*	2	1-**3**	2-3	2	2-4	2-4	3	2	2-3	2-3	2-3	2-3
10_{16}	3-**4**	2-3	2-3	4-5	2	2	2-4	3-4	2-3	3	**2**	2
10_{16}^*	2-**4**	1-3	**2**	2-**3**	**1**	2	3-4	**2**	2	**1**	2-3	2-3
10_{17}	2-3	2-3	2	3	2-3	2-3	2	2-3	2	2-3	2	2
10_{18}	1-**3**	1-2	2	2-**3**	2-3	2	3	**2**	2	**1**	2	2
10_{18}^*	**3**	2	2	4	2-3	2-3	2-3	3	2	3	2	2
10_{19}	2-3	2	2-3	2-3	2-4	2-3	**3**	2-3	2-3	2	2-3	2
10_{19}^*	**3**	2	2-3	4	2-4	2-3	2	3-4	2-3	3	2	2
10_{20}	1-3	1-3	**1**	**2**	2	**2**	3-4	**1**	2	**2**	2-3	2-3
10_{20}^*	3-5	2-4	2-3	4-5	2-**3**	2	2	3-5	2-3	3-4	2	2-3
10_{21}	1-3	1-2	**2**	**1**	2-**3**	2-4	4	2	**1**	2	3	2-3
10_{21}^*	4-5	3-4	2-3	5	2-4	3	2-3	4-5	3	4	2	2-3
10_{22}	2-**4**	2-3	2-3	3-4	2-**3**	**1**	2-3	2-**3**	2-3	2	**1**	2-3
10_{22}^*	2-4	2-3	2-3	3	**2**	**2**	2-4	2	2-3	2	2	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_{11}	10_{12}	10_{13}	10_{14}	10_{15}	10_{16}	10_{17}	10_{18}	10_{19}	10_{20}	10_{21}	10_{22}
$4_1 \# 5_1$	2-4	3-4	2-**4**	2	3-4	3-**4**	2-3	1-**3**	2-3	1-3	1-3	2-**4**
$4_1 \# 5_1^*$	3-**4**	2	2-**4**	**4**	2	2-**4**	2-3	**3**	**3**	3-5	4-5	2-4
$4_1 \# 5_2$	1-3	2-4	2-3	1-3	2-3	2-3	2-3	1-2	2	1-3	1-2	2-3
$4_1 \# 5_2^*$	2-3	1-3	2-3	3	1-**3**	1-3	2-3	2	2	2-4	3-4	2-3
10_1	**2**	2-3	**1**	2-3	2-3	2-3	2	2	2-3	**1**	**2**	2-3
10_1^*	2-**3**	2-3	**2**	2-3	2-3	**2**	2	2	2-3	2-3	2-3	2-3
10_2	2-**3**	4	3-4	**1**	4	4-5	3	2-**3**	2-3	**2**	**1**	3-4
10_2^*	4-5	2	3-5	5	2	2-**3**	3	4	4	4-5	5	3
10_3	**1**	2-4	2	2-4	2-4	2	2-3	2-3	2-4	2	2-**3**	2-**3**
10_3^*	2	2-4	**1**	2-4	2-4	**1**	2-3	2-3	2-4	2-**3**	2-4	**2**
10_4	**1**	2-4	**2**	2-4	2-4	2	2-3	2	2-3	**2**	2-4	**1**
10_4^*	**2**	2-4	2	3-4	2-4	2	2-3	2-3	2-3	2	3	**2**
10_5	3-5	**1**	2-4	4	2	2-4	2	3	**3**	3-4	4	2-3
10_5^*	2-3	3	2-4	2	3	3-4	2	2-3	2	2	2-3	2-4
10_6	2	3-4	2-3	2	3-4	3-4	2-3	**2**	2-3	**1**	2	2-**3**
10_6^*	3-4	2	2-4	4-5	2	**2**	2-3	3	3-4	3-5	4-5	2
10_7	2-**3**	2-3	2	2-3	2-3	2-3	2	2	2-3	2	**1**	2-3
10_7^*	2-**3**	2-3	2-3	3	2-3	2	2	2	2-3	2-3	3	2-3
10_8	**1**	3-4	2-**3**	2	3-4	3	2-3	**1**	2	**2**	2	2
10_8^*	**3**	2-3	2-3	4	2-3	**1**	2-3	3	3	3-4	4	2
10_9	2-**3**	2-3	2-3	3	2-3	**2**	2	2	2-3	2-3	3	**1**
10_9^*	**2**	2-3	2-3	2	2-3	2-3	2	2	2	2	2	2
10_{10}	2-3	2-3	2-3	2-3	2-3	2	2	2	2	2-3	2-3	2-3
10_{10}^*	2-3	2-3	2	2-3	2-3	2-3	2	2	2	2-3	2-3	2-3
10_{11}	0	2-4	2	2-3	2-4	2	2-4	2	2-3	**1**	2-**3**	2
10_{11}^*	2	2-4	2	3-4	2-4	2	2-4	2-3	2-3	2-**3**	3-4	**1**
10_{12}	2-4	0	2-4	3	**1**	2-4	2	2-3	2-3	2-3	3-4	2-4
10_{12}^*	2-4	2-**3**	2-4	2	2	2-4	2	2-3	2	2-3	2	2-4
10_{13}	2	2-4	0	2-4	2-4	2	2-3	2-3	2-3	2	2-3	2-**3**
10_{13}^*	2	2-4	2	2-4	2-4	2	2-3	2	2-3	2-**3**	2-4	2-3
10_{14}	2-3	3	2-4	0	3	3-4	2-3	2	2	2	2	2-4
10_{14}^*	3-4	2	2-4	4	2	2-**3**	2-3	3	3	3-4	4	2-3
10_{15}	2-4	**1**	2-4	3	0	2-4	**1**	2-3	**2**	2-3	3	2-4
10_{15}^*	2-4	2	2-4	2	2	2-4	**1**	2-3	2	2-3	2-3	2-4
10_{16}	2	2-4	2	3-4	2-4	0	2-3	2	2-3	2-**3**	3-4	2-3
10_{16}^*	2	2-4	2	2-**3**	2-4	2	2-3	2	2-3	2-3	2	2
10_{17}	2-4	2	2-3	2-3	**1**	2-3	0	2	**1**	2-3	2-3	2-3
10_{18}	2	2-3	2-3	2	2-3	2	2	0	2	2-3	2-3	2
10_{18}^*	2-3	2-3	2	3	2-3	2	2	2	2	2-3	3	2-3
10_{19}	2-3	2-3	2-3	2	**2**	2-3	**1**	2	0	2	2-3	2-3
10_{19}^*	2-3	2	2-3	3	2	2-3	**1**	2	2	2-4	3	2
10_{20}	**1**	2-3	2	2	2-3	2-**3**	2-3	2-3	2	0	2-3	2-**3**
10_{20}^*	2-**3**	2-3	2-**3**	3-4	2-3	2-3	2-3	2-3	2-4	2-4	3-4	2
10_{21}	2-**3**	3-4	2-3	2	3	3-4	2-3	2-3	2-3	2-3	0	2-4
10_{21}^*	3-4	2	2-4	4	2-3	2	2-3	3	3	3-4	4	2-3
10_{22}	2	2-4	2-**3**	2-4	2-4	2-3	2-3	2	2-3	2-**3**	2-4	0
10_{22}^*	**1**	2-4	2-3	2-3	2-4	2	2-3	2-3	2	2	2-3	**1**

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	0_1	3_1	4_1	5_1	5_2	6_1	6_2	6_3	$3_1 \# 3_1$	$3_1 \# 3_1^*$	7_1	7_2	7_3	7_4
10_{23}	1	2	2	3	2	2	2	2	3	2-3	4	2	1	2
10_{23}^*	1	2	2	2	1	2	2	2	2-3	2-3	**2**	2	3	2-3
10_{24}	2	2	2-3	**2**	1	2	2	2-3	2-3	2-3	2-3	2	3-4	2-4
10_{24}^*	2	2-3	2-3	3-4	2-3	2-3	2-3	2-3	3-4	2-3	4-5	2-3	2	2
10_{25}	2	1	2-3	2	2	2	2	2	2	2	**2**	**2**	4	3-4
10_{25}^*	2	3	2-3	4	3	2-3	3	2	4	2	5	3	2-3	2
10_{26}	1	2	1	2-3	2	2	2	2	2-3	2-3	3-4	2	2-3	2-3
10_{26}^*	1	2	1	2-3	2	2	2	2	2-3	2-3	3-4	2	2-3	2-3
10_{27}	1	2	2	3	2	2	2	2	3	2	4	2	2-3	2
10_{27}^*	1	1	2	2	2	2	1	2	2	2	**2**	2	3	2-3
10_{28}	2	2	2	2-3	2-3	2-3	2-3	1	2-3	2-3	3-4	2-3	2	1
10_{28}^*	2	2	2	**2**	1	2-3	2-3	1	2-3	2-3	3	2	2-4	2-3
10_{29}	2	2	2	2-3	2-3	1	1	2-3	1-3	1-3	2-4	2-3	3-4	2-4
10_{29}^*	2	2-3	2	3-4	2-3	2	2-3	2-3	3-4	1-3	4-5	2-3	2-4	2-3
10_{30}	1	2	2	**2**	1	2	1	2	2-3	2-3	2-3	2	3	2-3
10_{30}^*	1	2	2	3	2	2	2	2	3	2-3	4	2	2	1
10_{31}	1	1	2	2	2	2	2	2	2	1-2	3	2	2	2
10_{31}^*	1	2	2	**2**	1	2	2	2	2-3	1-2	3	2	2-3	2
10_{32}	1	1	2	2	2	2	2	1	2	1-2	3	2	2-3	2-3
10_{32}^*	1	2	2	2-3	2	2	1	1	2-3	1-2	3-4	2	2-3	2
10_{33}	1	2	2	2-3	2	1	2	2	2-3	2-3	3-4	2	2-3	2-3
10_{34}	2	1	2-3	2	2	2-3	2	2	2	2	3	2-3	2	2
10_{34}^*	2	2	2-3	**2**	1	2-3	2-3	2	2-3	2	3	1	2-3	2
10_{35}	2	2-3	1	2-4	2-3	2	2	2-3	2-4	2-4	3-5	2-3	2-4	2-4
10_{35}^*	2	2-3	1	2-4	2-3	1	2	2-3	2-4	2-4	3-5	2-3	2-4	2-4
10_{36}	2	1	1	2	1	2	2	2	2	2	2-3	1	3-4	2-4
10_{36}^*	2	2-3	1	3-4	2-3	2	2	2	3-4	2	4-5	2-3	2	2
10_{37}	2	2	2-3	**2**	1	2-3	2-3	2	2-3	2-3	3	2	2	2
10_{38}	2	2	2	**2**	1	1	1	2-3	2-3	2-3	2-3	2	3-4	2-4
10_{38}^*	2	2-3	2	3-4	2-3	**2**	2-3	2-3	3-4	2-3	4-5	2-3	2	2
10_{39}	2	2	2	2	1	**2**	1	2-3	2-3	2-3	**2**	2	4	3-4
10_{39}^*	2	3	2	4	3	2-3	3	2-3	4	2-3	5	3	2	2
10_{40}	2	2	2-3	3	2-3	2-3	2-3	1	3	2	4	2-3	2	2
10_{40}^*	2	1	2-3	2	1	2-3	2	1	2	2	**2**	2	3-4	2-3
10_{41}	2	2	1	2-3	2	1	1	2-3	2-3	2-3	2-4	**2**	3-4	2-4
10_{41}^*	2	2-3	1	3-4	2-3	2	2	2-3	3-4	2-3	4-5	2-3	2-3	2-3
10_{42}	1	2	1	2-3	2	1	1	1	2-3	1-3	3-4	2	2-3	2-3
10_{42}^*	1	2	1	2-3	2	2	2	1	2-3	1-3	3-4	2	2-3	2-3
10_{43}	2	1	2	2	2	2-3	2	2	2	2	3	**2**	2-3	2
10_{44}	1	1	1	2	2	2	2	1	2	2	2-3	2	3	2-3
10_{44}^*	1	2	1	3	2	2	2	1	3	2	4	2	2-3	2
10_{45}	2	2	1	2-3	2-3	1	1	2-3	2-3	2-3	3-4	2-3	2-4	2-3
$3_1 \# 7_1$	4	3	4-5	2	3	4-5	3-4	4	2	4	1	3	6	5-6
$3_1^* \# 7_1^*$	4	5	4-5	6	5	4-5	5	4	6	4	7	5	**2**	**3**
$3_1 \# 7_1^*$	2-4	3	2-5	4	3-4	2-5	3-4	2-4	4	2	5	3-5	1-**2**	2-**3**
$3_1^* \# 7_1$	2-4	1-3	2-5	2	1-3	2-5	1-4	2-4	1-4	2-4	1	1-3	4-**5**	3-**4**
$3_1 \# 7_2$	2	1	2-3	1-2	1-2	2-3	1-2	2	1-2	2	1-3	1	4	3-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	7_5	7_6	7_7	$3_1 \# 4_1$	8_1	8_2	8_3	8_4	8_5	8_6	8_7	8_8	8_9	8_{10}	8_{11}
10_{23}	3	2	2	2-3	2	3	2-3	2-3	1-3	2-3	1	2	2	1-2	2
10^*_{23}	2	2	2	2-3	2	2-3	2-3	2-3	3	2-3	2	2-3	2	2-3	2
10_{24}	2	2	2-3	1-3	1	**2**	**2**	**2**	3-4	1	2-3	2-3	2-3	2-4	1
10^*_{24}	3-4	2-3	2-3	2-4	2-3	3-4	**2**	2-3	2-3	2-4	2-3	2	2-3	1-2	2-3
10_{25}	1	2	2-3	2	**2**	1	2-3	**2**	4	1	3	2	2-3	3	1
10^*_{25}	4	3	2	3-4	2-3	4	2-3	3	2-3	3-4	2	2	2-3	1-3	3
10_{26}	2-3	2	2	2	2	2-3	**2**	1	2-3	**2**	2	2-3	1	1-3	2
10^*_{26}	2-3	2	2	2	2	**2**	**2**	2	2-3	2-3	2	2-3	1	1-3	1
10_{27}	3	2	2	2-3	2	3	2-3	2-3	1-2	2-3	1	2	2	1-3	2
10^*_{27}	1	2	2	2	2	2	2-3	2	3	2	2	2	2	2-3	2
10_{28}	2-3	2-3	2-3	1-3	2-3	2-3	2-4	2-3	2-4	2-3	2	1	2-3	2	2-3
10^*_{28}	2	2	2-3	1-3	2-3	2-3	2-4	2-3	2-4	2-3	2	2	2-3	2	2
10_{29}	2-3	2-3	2-3	2-3	2	2	2	1	3-4	1	2-3	2-3	2	2-4	2
10^*_{29}	3-4	2-3	2-3	2-3	**2**	3-4	2	2	2	2-3	2-3	2-3	2	1-4	2-3
10_{30}	2	2	2	1-3	2	2	2-3	2	3	2	2	2-3	2	2-3	1
10^*_{30}	3	2	2	2-3	2	3	2-3	2-3	1-2	2-3	2	2	2	1-2	2
10_{31}	2	2	2	1-2	2	2	2-3	2-3	2-3	2	2	2	2	1-2	2
10^*_{31}	2	2	2	1-3	2	2-3	2-3	2-3	2-3	2-3	2	1	2	1-3	2
10_{32}	2	2	2	2	2	2	2-3	**2**	2	2	2	2	1	1-2	2
10^*_{32}	2-3	2	2	2-3	2	2	2-3	2	2-3	2	2	2	1	1-2	2
10_{33}	2-3	2	2	2-3	2	2-3	2	2	2-3	2	2	2-3	2	2-3	2
10_{34}	2	2	2-3	2	2-3	2	2-4	2-3	2-4	2	**2**	1	2-3	1-2	2-3
10^*_{34}	2	2	2	2-3	2-3	2-3	2-4	2-4	2-3	2-3	2	2	2-3	1-3	2
10_{35}	2-4	2	2	2	**2**	2-3	2	2	2-3	2-3	2-3	2-4	2-3	1-4	2-3
10^*_{35}	2-4	2	2	2	1	2-3	2	2	2-3	2	2-3	2-4	2-3	1-4	2
10_{36}	2	2	2	2	2-3	2	2-3	2	3	2	2-3	2	2-3	2-3	2
10^*_{36}	3-4	2	2	2	2-3	3	2-3	2	2-3	2-3	2	2	2-3	1-2	2-3
10_{37}	2	2	2-3	1-3	2-3	2-3	2-4	2-4	2-4	2-3	**2**	1	2-3	2	2
10_{38}	2	2	2-3	2-3	2	2	2	2	3-4	1	2-3	2-3	2	2-4	2
10^*_{38}	3-4	2-3	2-3	2-3	2-3	3-4	2	2	1-2	2-3	2-3	2	2	1-2	2-3
10_{39}	1	2	2-3	2-3	2-3	1	2-3	2	4	2	3	2-3	2	3-4	2
10^*_{39}	4	3	2-3	3	2-3	4	2-3	3	1-2	3-4	2-3	2	2	2	3
10_{40}	3	2-3	2	2-3	2-3	3	2-4	2-4	2-3	2-3	1	1	2-3	1-2	2-3
10^*_{40}	1	2	2-3	2	2-3	2	2-4	2-3	3-4	2	2	2	2-3	2	2
10_{41}	2-3	1	2	2	2	2	2	2	3	2	2-3	2-3	2	2-4	1
10^*_{41}	3-4	2	2	2	**2**	3	2	2	1-2	2-3	2-3	2-3	2	1-3	2-3
10_{42}	2-3	2	2	2	2	2	2	2	2-3	2	2	2	2	2	2
10^*_{42}	2-3	1	2	2	2	2-3	2	2	2	2-3	2	2	2	2	2
10_{43}	2	1	2	2	2-3	2	2-4	2-3	2-3	2	2	1	2-3	1-3	2-3
10_{44}	2	1	1	2	2	2	2-3	2	3	2	2	2	2	2	2
10^*_{44}	3	2	2	2	2	3	2-3	2	1-3	2-3	2	2	2	1-2	2
10_{45}	2-3	2	1	2	2	2	2	2	2	2	2-3	2-3	2	2-4	2
$3_1 \# 7_1$	**2**	3-4	4-5	3-4	4-5	2-3	4-6	3-5	6	3-4	5	4	4-5	5	3-4
$3^*_1 \# 7^*_1$	6	5	4	5-6	4-5	6	4-6	5-6	2-3	5-6	3	4	4-5	3	5
$3_1 \# 7^*_1$	4	3-4	2-4	3-4	2-5	4	2-6	3-5	1-5	3-4	1-3	2-4	2-5	1-3	3-5
$3^*_1 \# 7_1$	**2**	1-4	2-**4**	2-4	2-5	2-3	2-6	1-5	4-**5**	1-4	3-**4**	2-4	2-5	3-5	2-4
$3_1 \# 7_2$	2	1-2	2-3	1-2	2-3	2	2-4	1-3	4	1-2	3	2	2-3	3	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	8_{12}	8_{13}	8_{14}	8_{15}	8_{16}	8_{17}	8_{18}	8_{19}	8_{20}	8_{21}	$3_1 \# 5_1$	$3_1^* \# 5_1$
10_{23}	2-3	2	2	3	2-3	1-2	1-3	2-3	1-2	2	4	2-4
10_{23}^*	2-3	1	2	1-2	1-2	1-2	1-3	4	1-2	1-2	2-3	1-3
10_{24}	**2**	2	2	1-2	1-2	1-3	1-3	4-5	2	1-3	2-**3**	1-**3**
10_{24}^*	**2**	2-3	2-3	3-4	2-4	1-3	1-3	2-**3**	2-3	2-3	4-5	2-**4**
10_{25}	2-3	2-3	2	2-3	1-2	2	2	5	2-3	2-3	2-3	2-3
10_{25}^*	2-3	2-3	3	4	3	2	2	1-3	2-3	3	5	**3**
10_{26}	2	2	2	2-3	2	2	1-3	3-4	1-2	1-2	3-4	1-4
10_{26}^*	2	2	2	2-3	2	2	1-3	3-4	1-2	1-2	3-4	1-4
10_{27}	2-3	2	2	3	2-3	1-2	1-2	2-3	1-2	2	4	2-**3**
10_{27}^*	2-3	1	2	1-3	1-2	1-2	1-2	4	1-2	1-2	2-3	1-3
10_{28}	2-3	2	2-3	2-4	2	1-3	2-3	**3**	1-2	1-3	3-4	2-4
10_{28}^*	2-3	1	2	2	2	1-3	2-3	3-4	1-2	1-3	**3**	2-**3**
10_{29}	1	2-3	2	2-4	1-3	2-3	1-3	4-5	1-3	2	2-4	2-4
10_{29}^*	1	2-3	2-3	3-4	2-3	2	1-3	2-4	1-3	2-3	4-5	2-**4**
10_{30}	2-3	2	1	1-2	1-2	1-2	1-3	4	1-2	1-2	2-**3**	2-**3**
10_{30}^*	2-3	2	2	3	2-3	1-2	1-3	2-**3**	1-2	2	4	2-4
10_{31}	2-3	2	2	2-3	2	2	1-2	**3**	1-2	1-2	3	2-3
10_{31}^*	2-3	1	2	2	2	2	1-2	3	1-2	1-2	**3**	2-**3**
10_{32}	2-3	2	1	2-3	2	2	1-2	3-4	1-2	1-2	3	1-3
10_{32}^*	2-3	2	2	2-3	2	2	1-2	3	1-2	1-2	3-4	1-**3**
10_{33}	2	1	2	2-3	1-3	2	2-3	3-4	1-2	2	3-4	2-4
10_{34}	2-4	2-3	2	2-3	2	1-2	2	**3**	1-3	2-3	3	2-3
10_{34}^*	2-4	2	2	2	2	1-2	2	3	1-2	2-3	**3**	2-**3**
10_{35}	1	2	2	2-4	2	1-3	1-4	3-5	1-3	1-3	3-5	1-5
10_{35}^*	1	2	2	2-4	2	1-3	1-4	3-5	1-3	1-3	3-5	1-5
10_{36}	2	2	1	2	2	1-2	1-2	4-5	2	2-3	2-3	2-3
10_{36}^*	2	2	2	3-4	2	1-2	1-2	2-3	2-3	2-3	4-5	2-**3**
10_{37}	2-4	2	2	2	2	1-3	2-3	**3**	1-2	1-3	**3**	2-**3**
10_{38}	2	2	1	1-2	1-2	1-3	1-3	4-5	1-2	1-2	2-**3**	1-**3**
10_{38}^*	2	2-3	2-3	3-4	2-3	1-2	1-3	2-**3**	1-3	2-3	4-5	2-**4**
10_{39}	2-3	2	1	1-2	1-2	2-3	2-3	5	2	2	2-3	2-3
10_{39}^*	2-3	2-3	3	4	3	2	2-3	2-3	2-3	3	5	3-**4**
10_{40}	2-4	2	2-3	3-4	2	1-2	2	2-3	2	2-3	4	2-**3**
10_{40}^*	2-4	2	2	1-2	2	1-2	2	4	2	2-3	2-3	2-3
10_{41}	1	2	2	1-3	1-2	1-3	1-3	4-5	1-3	1-2	2-4	1-4
10_{41}^*	1	2	2	3-4	2	1-2	1-3	2-4	1-3	2-3	4-5	2-**4**
10_{42}	2	2	2	2-3	1-2	1-2	1-3	3-4	1-2	2	3-4	2-4
10_{42}^*	2	1	2	2-3	1-2	1-2	1-3	3-4	1-2	2	3-4	2-4
10_{43}	2-3	2-3	2	2-3	1-2	1-2	2	3	1-3	2-3	3	2-3
10_{44}	2	2	1	1-3	1-2	1-2	1-2	4	1-2	1-2	2-3	1-3
10_{44}^*	2	2	2	3	2	1-2	1-2	2-3	1-2	2	4	2-**3**
10_{45}	2	2	2	2-4	2	2	1-3	3-4	1-3	2	3-4	2-4
$3_1 \# 7_1$	4-6	4	3-4	2-3	3-4	4	4	7	4	3	1	3
$3_1^* \# 7_1^*$	4-6	4-5	5	6	5	4	4	1-3	4-5	5	7	**5**
$3_1 \# 7_1^*$	2-6	2-5	3-4	4-5	3-4	2-4	2-4	1-3	2-3	3-5	5	3-5
$3_1^* \# 7_1$	2-6	2-4	1-4	1-3	1-4	2-4	2-4	**5**	2-4	1-5	1-3	1
$3_1 \# 7_2$	2-4	2-3	2	1-3	2	2	2	5	2-3	1-3	**2**	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 5_2$	$3_1^* \# 5_2$	$4_1 \# 4_1$	9_1	9_2	9_3	9_4	9_5	9_6	9_7	9_8	9_9	9_{10}
10_{23}	3	1-3	2-3	5	2	2	3	2	4	3	2-3	4	2
10_{23}^*	2	1-2	2-3	3	2	4	2	2-3	2-3	2-3	2-3	2	3-4
10_{24}	2	2	1-4	3-4	2-3	4-5	2-3	2-4	2-3	2-3	2-3	2-3	3-5
10_{24}^*	3-4	2-3	1-4	5-6	2-3	2-3	3-4	2	4-5	3-4	2-3	4-5	2-3
10_{25}	2	2-3	2-4	2-3	2-3	5	2-**3**	3-4	2	2	2	2	4-5
10_{25}^*	4	2	2-4	6	3	2-3	4	2-3	5	4	3	5	2-3
10_{26}	2-3	2-3	2	4-5	2	3-4	2-3	2-3	3-4	2-3	2	3-4	2-4
10_{26}^*	2-3	2-3	2	4-5	2	3-4	2-3	2-3	3-4	2-3	2	3-4	2-4
10_{27}	3	2	2-3	5	2	2-3	3	2-3	4	3	2-3	4	2-3
10_{27}^*	1-2	2-3	2-3	3	2	4	2-3	2-3	2	2	2	2	3-4
10_{28}	2-3	2-3	2-3	4-5	2-3	3	2-4	2	3-4	2-3	2-3	3-4	2
10_{28}^*	2	2	2-3	4	2-3	3-5	2-3	2-4	3	2-3	2-3	3	2-4
10_{29}	2-3	2-4	2-3	3-5	2-3	4-5	2-4	2-4	2-4	2-3	2-3	2-4	3-5
10_{29}^*	3-4	2-3	2-3	5-6	2-3	2-5	3-4	2-4	4-5	3-4	2	4-5	2-4
10_{30}	2	1-2	2-3	3-4	2	4	2-3	2-3	2-3	2-3	2-3	2-3	3-4
10_{30}^*	3	1-3	2-3	5	2	2-3	3	2	4	3	2-3	4	2
10_{31}	2	1-3	2-3	4	2	3	2-3	2	3	2	2	3	2-3
10_{31}^*	2	1-2	2-3	4	2	3-4	2-3	2-3	3	2-3	2-3	3	2-3
10_{32}	2	1-3	2-3	4	2	3-4	2-3	2-3	3	2	2	3	2-4
10_{32}^*	2-3	1-2	2-3	4-5	2	3-4	2-3	2-3	3-4	2-3	2-3	3-4	2-3
10_{33}	2-3	2-3	1-3	4-5	2	3-4	2-3	2-3	3-4	2-3	2	3-4	2-4
10_{34}	2	1-3	2-4	4	2-3	3	2-4	2	3	2	2	3	2-3
10_{34}^*	2	1-2	2-4	4	2	3-4	2	2-3	3	2	2-3	3	2-3
10_{35}	2-4	2-4	2	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2	3-5	2-5
10_{35}^*	2-4	2-4	2	4-6	2-3	3-5	2-4	2-4	3-5	2-4	2	3-5	2-5
10_{36}	2	2	2	3-4	2	4-5	2	2-4	2-3	2	2	2-3	3-5
10_{36}^*	3-4	2	2	5-6	2-3	2-3	3-4	2	4-5	3-4	2	4-5	2-3
10_{37}	2	2	2-4	4	2-3	3	2-3	2	3	2-3	2-3	3	2-3
10_{38}	2	1-2	2-3	3-4	2-3	4-5	2-3	2-4	2-3	2-3	2-3	2-3	3-5
10_{38}^*	3-4	1-3	2-3	5-6	2-3	2-3	3-4	2	4-5	3-4	2	4-5	2-3
10_{39}	1-2	2	2-3	2-3	2-3	5	2-3	3-4	2	2	2-3	2	4-5
10_{39}^*	4	2-3	2-3	6	3	2-3	4	2	5	4	3	5	2-3
10_{40}	3	2	1-4	5	2-3	2-3	3-4	2	4	3	2-3	4	2-3
10_{40}^*	2	2	1-4	3	2-3	4-5	2-3	2-4	2	2	2	2	3-4
10_{41}	1-3	2-3	2	3-5	2-3	4-5	2-3	2-4	2-4	2-3	2	2-4	3-5
10_{41}^*	3-4	2-3	2	5-6	2-3	2-4	3-4	2-3	4-5	3-4	2	4-5	2-4
10_{42}	2-3	2-3	2	4-5	2	3-4	2-3	2-3	3-4	2-3	2	3-4	2-4
10_{42}^*	2-3	2-3	2	4-5	2	3-4	2-3	2-3	3-4	2-3	2	3-4	2-4
10_{43}	2	2	2-3	4	2-3	3-4	2-3	2-3	3	2	2	3	2-3
10_{44}	2	1-3	2	3-4	2	4	2-3	2-3	2-3	2	2	2-3	3-4
10_{44}^*	3	1-2	2	5	2	2-4	3	2-3	4	3	2	4	2-3
10_{45}	2-3	1-3	2	4-5	2-3	3-5	2-4	2-4	3-4	2-3	2	3-4	2-4
$3_1 \# 7_1$	**2**	4	4-6	2	3-4	7	2-3	5-6	2	2-3	3-4	2	6-7
$3_1^* \# 7_1^*$	6	4	4-6	8	5	2	6	3-4	7	6	5-6	7	2-**3**
$3_1 \# 7_1^*$	4	2-4	2-6	6	3-5	1-2	4-6	1-4	5	4	3-4	5	1-**3**
$3_1^* \# 7_1$	1-4	**2**	2-6	2	1-4	5-**6**	1-3	3-**5**	2	1-3	1-4	1-2	4-**5**
$3_1 \# 7_2$	1	2-3	2-4	2-4	2	5	1-2	3-4	2-3	2	2	2-3	4-5

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	9_{11}	9_{12}	9_{13}	9_{14}	9_{15}	9_{17}	9_{18}	9_{19}	9_{20}	9_{21}	9_{23}	9_{26}	9_{27}	9_{31}
10_{23}	2	2	2	2	2	2-3	3	2	3	2	3	2	2	2-3
10^*_{23}	3	2	3-4	2	2-3	2-3	2	2	2	2	2	2	2	2
10_{24}	3-4	2-3	3-5	2-3	2-4	2-3	2	2-3	2	2-3	2	2-3	2-3	2
10^*_{24}	2	2-3	2-3	2	2	2-4	3-4	2-3	3-4	2	3-4	2	2-3	2-4
10_{25}	4	2-3	4-5	2-3	3-4	2-3	2	2-3	2	3	2	3	2	2
10^*_{25}	2-3	3	2	2	2-3	3	4	2-3	4	2	4	2	2-3	3
10_{26}	2-3	2	2-4	2	2	2	2-3	2	2-3	2	2-3	2	2	2-3
10^*_{26}	2-3	2	2-4	2	2	2	2-3	2	2-3	2	2-3	2	2	2-3
10_{27}	2-3	2	2	2	2-3	2-3	3	2	3	2	3	2	2	2-3
10^*_{27}	3	2	3-4	2	2-3	2	2	2	2	2	2	2	2	2
10_{28}	2	2-3	2	2	2	2-3	2-4	2-3	2-3	2	2-4	2	2	2
10^*_{28}	2-4	2-3	2-4	2-3	2-3	2-3	2	2-3	2	2-3	2	2-3	2	2
10_{29}	3-4	2	3-5	2-3	2-3	2	2-4	2	2	2-3	2-4	2-3	2-3	2-3
10^*_{29}	2-4	2-3	2-4	2	2-3	2-3	3-4	2-3	3-4	2-3	3-4	2	2	2-4
10_{30}	3	2	3-4	2	2-3	2	2	2	2	2	2	2	2	2
10^*_{30}	2	2	2	2	2	2-3	3	2	3	2	3	2	2	2-3
10_{31}	2	2	2-3	2	2	2-3	2-3	2	2	2	2-3	2	2	2
10^*_{31}	2-3	2	2-3	2	2-3	2-3	2	2	2	2	2	2	2	2
10_{32}	2-3	2	2-4	2	2-3	2-3	2-3	2	2	2	2-3	2	2	2
10^*_{32}	2-3	2	2-3	2	2-3	2	2-3	2	2	2	2-3	2	2	2
10_{33}	2-3	2	2-4	2	2-3	2-3	2-3	2	2-3	2	2-3	2	2	2-3
10_{34}	2	2-3	2-3	2	2	2-3	2-3	2-3	2	2	2-3	2	2	2
10^*_{34}	2-3	2	2-3	2	2-3	2-3	2	2-3	2	2	2	2	2-3	2
10_{35}	2-3	2-3	2-5	2	2	2	2-4	2	2-3	2-3	2-4	2-3	2	2-4
10^*_{35}	2-3	2	2-5	2-3	2	2	2-4	2	2-3	2-3	2-4	2-3	2	2-4
10_{36}	3	2	3-5	2-3	2	2	2	2	2	2-3	2	2-3	2	2
10^*_{36}	2	2-3	2-3	2	2	2	3-4	2	3	2	3-4	2	2	2-3
10_{37}	2	2-3	2-3	2	2	2-4	2	2-3	2	2	2	2	2-3	2
10_{38}	3-4	2	3-5	2-3	2-3	2	2	2	2	2-3	2	2-3	2-3	2
10^*_{38}	2	2-3	2-3	2	2	2-3	3-4	2-3	3-4	2	3-4	2	2	2-4
10_{39}	4	2-3	4-5	2-3	3	2	2	2-3	2	3	2	3	2-3	2
10^*_{39}	2	3	2	2	2	3	4	2-3	4	2	4	2	2	3-4
10_{40}	2	2-3	2	2	2	2-3	3-4	2-3	3	2	3-4	2	2	2
10^*_{40}	3-4	2-3	3-4	2-3	2-4	2-3	2	2-3	2	2-3	2	2-3	2	2
10_{41}	3	2	3-5	2-3	2	2	2-3	2	2	2-3	2-3	2-3	2	2-3
10^*_{41}	2	2-3	2-4	2	2	2	3-4	2	3	2	3-4	2	2	2-4
10_{42}	2	2	2-4	2	2	2	2-3	2	2	2	2-3	2	2	2
10^*_{42}	2-3	2	2-4	2	2	2	2-3	2	2	2	2-3	2	2	2
10_{43}	2	2	2-3	2	2	2-3	2-3	2-3	2	2	2-3	2	2	2
10_{44}	3	2	3-4	2	2	2	2-3	2	2	2	2-3	2	2	2
10^*_{44}	2	2	2-3	2	2	2	3	2	3	2	3	2	2	2
10_{45}	2-3	2	2-4	2	2	2	2-4	2	2	2-3	2-4	2	2	2-3
$3_1 \# 7_1$	6	3-4	6-7	4-5	5-6	3-5	2-**3**	4-5	2-**3**	5	2-3	5	4	3
$3^*_1 \# 7^*_1$	2-3	5	2-3	4	3-4	5	6	4-5	6	3-4	6	3	4-5	5
$3_1 \# 7^*_1$	1-3	3-5	2-3	2-4	1-4	3-5	4-5	2-5	4	2-4	4-5	2-3	2-4	3-4
$3^*_1 \# 7_1$	4-**5**	1-4	4-**5**	2-**4**	3-**5**	1-5	2-**3**	2-5	2-**3**	3-**4**	2-3	3-**4**	2-4	2-3
$3_1 \# 7_2$	4	2	4-5	2-3	3-4	1-3	2	2-3	2	3	2-3	3	2	1-2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 6_1$	$3_1^* \# 6_1$	$3_1 \# 6_2$	$3_1^* \# 6_2$	$3_1 \# 6_3$	$3_1 \# 3_1 \# 3_1$	$3_1 \# 3_1^* \# 3_1^*$
10_{23}	2-3	2-3	3	2-3	2-3	4	2-4
10_{23}^*	2-3	2-3	1-3	2-3	2-3	2-4	2-4
10_{24}	2-3	2-3	1-3	1-3	2-3	2-4	2-4
10_{24}^*	2-4	2-3	3-4	1-3	2-4	4-5	2-4
10_{25}	2	3	2	2-3	2	2-3	3
10_{25}^*	3-4	2	4	2	3	5	2-3
10_{26}	2-3	2-3	2-3	2-3	1-3	3-4	2-4
10_{26}^*	2-3	2-3	2-3	2-3	1-3	3-4	2-4
10_{27}	2-3	2	3	2	2-3	4	2-3
10_{27}^*	2	2-3	1-2	2	2	2-3	2-3
10_{28}	2-3	2-3	2-3	2-3	2	3-4	2-4
10_{28}^*	2-3	2-3	2-3	2-3	2	3-4	2-4
10_{29}	1-2	2	2	2	2-3	2-4	2-4
10_{29}^*	2-3	1-3	3-4	2-3	2-4	4-5	2-4
10_{30}	2-3	2-3	2	1-2	2-3	2-4	2-4
10_{30}^*	2-3	2-3	3	1-3	2-3	4	2-4
10_{31}	1-2	1-3	2	1-3	2	3	2-3
10_{31}^*	1-3	1-2	2-3	1-2	2-3	3-4	2-3
10_{32}	1-2	1-3	2	1-3	1-2	3	2-3
10_{32}^*	1-3	1-2	2	1-2	1-2	3-4	2-3
10_{33}	2	2	2-3	2-3	1-3	3-4	2-4
10_{34}	2	2-3	2	1-3	2	3	2-3
10_{34}^*	2-3	2	2-3	1-2	2-3	3-4	2-3
10_{35}	2-3	2-3	2-3	1-3	1-4	3-5	2-5
10_{35}^*	2	2	2-3	1-3	1-4	3-5	2-5
10_{36}	1-2	2-3	2	2-3	1-2	2-3	2-3
10_{36}^*	2-3	1-2	3	2	2-3	4-5	2-3
10_{37}	2-3	2-3	2-3	2-3	2-3	3-4	2-4
10_{38}	2	2	1-2	2	2-3	2-4	2-4
10_{38}^*	2-**3**	2-3	3-4	2-3	2-4	4-5	2-4
10_{39}	2-3	**3**	1-2	2	2-3	2-4	3-4
10_{39}^*	3-4	2-3	4	2-3	3-4	5	2-4
10_{40}	2-3	1-2	3	1-2	2	4	2-3
10_{40}^*	1-2	2-3	1-2	1-3	2	2-3	2-3
10_{41}	2	2	1-2	2	2-3	2-4	2-4
10_{41}^*	2-3	2-3	3	2-3	2-4	4-5	2-4
10_{42}	2	2	2	2	2	3-4	2-4
10_{42}^*	2-3	2-3	2-3	2-3	2	3-4	2-4
10_{43}	2	2	2	2	2	3	2-3
10_{44}	2	2-3	1-2	2-3	1-2	2-3	2-3
10_{44}^*	2-3	2	3	2	2	4	2-3
10_{45}	2	2	2	2	2-3	3-4	2-4
$3_1 \# 7_1$	3-4	5-6	2-3	4-5	3	1-3	5
$3_1^* \# 7_1^*$	5-6	3-4	6	4	5	7	3
$3_1 \# 7_1^*$	3-4	1-4	4	2-4	3	5	1-3
$3_1^* \# 7_1$	1-4	3-**4**	1-4	2-**4**	2-4	1-5	3-5
$3_1 \# 7_2$	1-2	3-4	1-2	2-3	2	1-3	3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$4_1 \# 5_1$	$4_1 \# 5_2$	10_1	10_2	10_3	10_4	10_5	10_6	10_7	10_8	10_9	10_{10}
10_{23}	3-4	2-3	2	4	2-3	2-3	**1**	3-4	2	3	2	**1**
10^*_{23}	2-3	2	2	2-3	2-3	2-3	3	2-3	2	2-3	2	2
10_{24}	1-**3**	1-2	**1**	**2**	2	2-**3**	3-4	**1**	2	**2**	2-3	2-3
10^*_{24}	3-5	2-4	2-3	4-5	2-**3**	2	2-3	3-5	2-3	3-4	2-3	2-3
10_{25}	1-3	1-3	**2**	**1**	2-**3**	2-**3**	4	2	**1**	2	3	2-3
10^*_{25}	4-5	3-4	2-3	5	2-4	3	2	4-5	3	4	2	2-3
10_{26}	2-**3**	2	2	3-4	2-3	**1**	2-3	2-**3**	2	2	**1**	2
10^*_{26}	2-**3**	2	2	**3**	**2**	2-3	2-3	2-**3**	2	**2**	2	2
10_{27}	3-4	2-3	2	4	2-3	2-3	**1**	3-4	2	3	2	**1**
10^*_{27}	2-3	2-3	2	2-3	2-3	2-3	3	2-3	2	2	2	2
10_{28}	2-4	2-3	2-3	3-4	2-4	2-4	**2**	2-4	2-3	2-4	2-3	2
10^*_{28}	2-**3**	2	2-3	**3**	2-4	2-4	2-3	2-**3**	2-3	2-4	2-3	2-3
10_{29}	2-4	1-3	**2**	2-3	2-3	**1**	3-4	2	2-3	2	2-3	2-3
10^*_{29}	3-**4**	2-3	2-3	4-5	**2**	2	2-3	3-4	2-3	3	2-3	2
10_{30}	2-**3**	1-2	2	**2**	2-3	2-3	3	2-3	2	2	2	2
10^*_{30}	3-4	2-3	2	4	2-3	2-3	2-3	3-4	2	3	2	2
10_{31}	2-3	2-3	2	3	2-3	2-3	2-3	2-3	2	2-3	2	2
10^*_{31}	2-**3**	2	2	**3**	2-3	2-3	2	2-**3**	2	2-3	2	2
10_{32}	2-3	2-3	2	3	2-3	2-3	2-3	2-3	2	**2**	2	2
10^*_{32}	2-4	2-3	2	3	2-3	2-3	2	2-3	2	2	**1**	2
10_{33}	2-4	1-3	2	3-4	2-3	2	2-3	2-3	2	2-3	2	2
10_{34}	2-3	2-3	2-3	3	2-4	2-4	**2**	2-3	2-3	2-3	2-3	2
10^*_{34}	2-**3**	2	2-3	**3**	2-4	2-4	2	2-**3**	2	2-4	2	2-3
10_{35}	2-**3**	2	**2**	3-4	2-3	2	2-4	2-4	2-3	2-3	2-3	2
10^*_{35}	2-**3**	2	**1**	3-4	2	2-3	2-4	2-3	2	2-3	2-3	2
10_{36}	2-3	2	2-3	**2**	2-4	2-3	3-4	2-3	2	2-3	2-3	2
10^*_{36}	**3**	2	2-3	4	2-4	2-3	2	3-4	2-3	3	2	2
10_{37}	2-**3**	2	2-3	**3**	2-4	2-4	2-3	2-**3**	2-3	2-4	2-3	2-3
10_{38}	2-**3**	2	2-3	**2**	2-3	2-3	3-4	**1**	2-3	2	2-3	2-3
10^*_{38}	3-**4**	2-3	2-3	4-5	2-3	2	2-3	3-4	2-3	3	2-3	2
10_{39}	2-3	2	2-3	**1**	2-4	2-3	4	2	2-3	2	3	2-3
10^*_{39}	**4**	3	2-3	5	2-4	**3**	2-3	4-5	3	4	2	2-3
10_{40}	3-4	2-4	2-3	4	2-4	2-4	**1**	3-4	2-3	3-4	2	2-3
10^*_{40}	1-3	2	2-3	2-3	2-4	2-4	3	2-3	2-3	2-3	2-3	2-3
10_{41}	2-**3**	2	**2**	2-3	2-3	2-3	3-4	2-3	**1**	2	2-3	2
10^*_{41}	**3**	2	2-3	4	2-3	2	2-3	3-4	2-3	3	2-3	2
10_{42}	2-**3**	2	2	3	2-3	2-3	2-3	2-3	2	2	2	**1**
10^*_{42}	2-**3**	2	2	3-4	2-3	2	2-3	2-4	2	2-3	2	2
10_{43}	2-3	1-3	2-3	3	2-4	2-4	2	2-3	2-3	2-3	2	2-3
10_{44}	2-3	2	2	2-3	2-3	2-3	3	2-3	2	2-3	2	2
10^*_{44}	**3**	2	2	4	2-3	2-3	2	3-4	2	3	2	2
10_{45}	2-**3**	2	2-3	3	2-3	2	2-3	2-3	2-3	2	2-3	2
$3_1 \# 7_1$	2-3	3-4	4-5	2	4-6	3-6	6	2-3	3-4	2-4	5	4-5
$3_1^* \# 7_1^*$	6-7	5-6	4-5	7	4-6	5-6	2	6-7	5	6	3-4	4
$3_1 \# 7_1^*$	4-5	3-5	2-5	5	2-6	3-6	1-2	4-5	3-5	4-5	2-4	2-4
$3_1^* \# 7_1$	2-3	2-4	2-5	1-2	2-6	2-6	**4**	2-3	2-4	1-4	3-**4**	2-5
$3_1 \# 7_2$	2-3	2-3	2-3	1-3	2-4	2-4	4	2-3	1-2	2-3	3	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_{11}	10_{12}	10_{13}	10_{14}	10_{15}	10_{16}	10_{17}	10_{18}	10_{19}	10_{20}	10_{21}	10_{22}
10_{23}	2-4	2	2-3	3	2	2-3	2	2	2	2-3	3	2-3
10^*_{23}	2-4	2-3	2-3	2	2-3	2-3	2	2	2	2-3	2	2-3
10_{24}	2	2-4	2	2-3	2-3	2-**3**	2-3	2-3	2-3	2	**1**	2-**3**
10^*_{24}	2-**3**	2-3	2-**3**	3-4	2-**3**	**1**	2-3	2-3	2-3	2-4	3-4	2
10_{25}	2	3	2-3	2	3	3-4	2-3	2-3	2	**1**	2	2-**3**
10^*_{25}	3-4	2-3	2-4	4	2-3	2	2-3	3	3-4	3-4	4	2
10_{26}	2	2-3	2-3	2-3	2-3	**1**	2	2	2	2-3	2-3	2
10^*_{26}	2-3	2-3	2-3	2-3	2-3	2	2	2	2	2-3	2	2
10_{27}	2-4	2	2-3	3	2	2-3	2	2	2	2-3	3	2
10^*_{27}	2-3	2-3	2-3	2	2-3	2-3	2	2	2	2	2-3	2-3
10_{28}	2-4	**1**	2-4	2-3	2	2-3	2-3	2-3	2	2-3	2-4	2-4
10^*_{28}	2-4	2-3	2-4	2-3	2	2-4	2-3	2-3	2-3	2-3	2	2-4
10_{29}	2	2-4	**1**	2-3	2-4	2-3	2-3	2	2	**1**	2-3	2
10^*_{29}	2-3	2-4	2	3-4	2-4	2	2-3	2	2-3	2-**3**	3-4	2
10_{30}	2-3	2-3	2-3	**1**	2-3	2-3	2	2	2	2-3	**1**	2-3
10^*_{30}	2-4	2-3	2-3	3	2-3	2	2	2	2-3	2-3	3	2
10_{31}	2-3	**2**	2-3	2	**1**	2-3	2	2	**1**	2	2-3	2-3
10^*_{31}	2-4	2	2-3	2-3	2-3	2-3	2	2	2-3	2-3	2	2-3
10_{32}	2-3	2-3	2-3	2	2	2-3	2	**1**	2	2	2-3	2
10^*_{32}	2-3	2-3	2-3	2-3	2	2-3	2	2	2	2-3	2-3	2
10_{33}	2-3	2-3	2	2-3	2-3	2	2	2	**1**	2-3	2-3	2-3
10_{34}	2-3	**1**	2-4	2	**2**	2-3	2-3	2-3	2	2	2-3	2-4
10^*_{34}	2-4	2-3	2-4	2-3	2	2-4	2-3	2-3	2-3	2-3	2	2-3
10_{35}	2-3	2-4	**1**	2-3	2-4	2	2-3	2	2	2-**3**	2-4	2-3
10^*_{35}	2-3	2-4	2	2-3	2-4	2-3	2-3	2	2	2	2-3	2-3
10_{36}	2-3	2-3	2-3	**1**	2-3	2-3	2-3	2	2	2	2	2-3
10^*_{36}	2-3	2-3	2-3	3	2-3	2-3	2-3	2	2	2-4	3-4	2-3
10_{37}	2-4	2	2-4	2-3	**1**	2-3	**2**	2-3	2-3	2-3	2	2-4
10_{38}	2	2-4	2	2	2-3	2-3	2-3	**1**	2	2	2	2-3
10^*_{38}	2-3	2-3	2-3	3-4	2-**3**	2	2-3	2	2-3	2-4	3-4	2
10_{39}	2-3	3-4	2-**3**	2	3	3-4	2-3	2	2	2-3	2	2-3
10^*_{39}	3-4	2-3	2-4	4	2-3	2-3	2-3	3	3	3-4	4	2
10_{40}	2-4	2	2-4	3	2	2-3	2	2-3	2-3	2-3	3-4	2-3
10^*_{40}	2-3	2-3	2-4	2	2	2-4	2	2-3	2	2	2	2-4
10_{41}	2-3	2-4	2	2-3	2-4	2-3	2-3	2	2	2-3	2	2-3
10^*_{41}	2-3	2-4	2	3	2-4	2	2-3	2	2	2-**3**	3-4	2
10_{42}	2-3	2-3	2	2-3	2	2-3	2	2	2	2-3	2-3	2-3
10^*_{42}	2-3	2-3	2-3	2-3	2	2	2	2	2	2-3	2-3	2
10_{43}	2-3	2	2-4	2	2	2-4	2-3	2-3	2	2	2-3	2-3
10_{44}	2-3	2-3	2-3	2	2	2-3	2	2	2	2	2-3	2-3
10^*_{44}	2-3	2-3	2-3	3	2	2-3	2	2	2	2-3	3	2-3
10_{45}	2-3	2-4	2	2-3	2-4	2	2-3	2	2	2-3	2-3	2
$3_1 \# 7_1$	3-5	5	4-6	2-3	5	5-6	4	3-5	3-4	3-4	2-**3**	4-6
$3^*_1 \# 7^*_1$	5-7	3	4-6	6	3	3-5	4	5	5	5-6	6	4-5
$3_1 \# 7^*_1$	3-5	2-3	2-6	4	2-3	2-5	2-4	3-5	3-4	3-4	4-5	2-5
$3^*_1 \# 7_1$	2-5	3-5	2-6	1-3	3-5	3-6	2-4	1-5	2-4	2-4	2-**3**	2-**5**
$3_1 \# 7_2$	1-3	3	2-4	1-2	3	3-4	2-3	2-3	2	2	2-3	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_{23}	10_{24}	10_{25}	10_{26}	10_{27}	10_{28}	10_{29}	10_{30}	10_{31}	10_{32}	10_{33}	10_{34}
10_{23}	0	2-3	3	2	2	**1**	2-3	2	2	2	2	2
10^*_{23}	2	2	2-3	2	2	2-3	2-3	2	2	2	2	2-3
10_{24}	2-3	0	2	2-3	2-3	2-4	2	2	2-3	2-3	2-3	2-3
10^*_{24}	2	2-4	3-4	2	2-3	2	2-**3**	2-3	2	2-3	2-3	2
10_{25}	3	2	0	2-3	3	2-3	2	2	2	2	2-3	2
10^*_{25}	2-3	3-4	4	2	2	2-3	3-4	3	2-3	2-3	2-3	2-3
10_{26}	2	2-3	2-3	0	2	2-3	2	2	2	2	2	2-3
10^*_{26}	2	2	2	2	2	2-3	2-3	2	2	2	2	2-3
10_{27}	2	2-3	3	2	0	2	2-3	2	2	2	2	2-3
10^*_{27}	2	2-3	2	2	2	2-3	2	2	2	2	2	2
10_{28}	**1**	2-4	2-3	2-3	2	0	2-4	2-3	**1**	2	2	2
10^*_{28}	2-3	2	2-3	2-3	2-3	2	2-4	2	2	2	2	2-3
10_{29}	2-3	2	2	2	2-3	2-4	0	2	2-3	2-3	2	2-3
10^*_{29}	2-3	2-**3**	3-4	2-3	2	2-4	2	2-3	2-3	2	2	2-4
10_{30}	2	2	2	2	2	2-3	2	0	2	2	2	2-3
10^*_{30}	2	2-3	3	2	2	2	2-3	2	2	2	2	2
10_{31}	2	2-3	2	2	2	**1**	2-3	2	0	2	2	2
10^*_{31}	2	2	2-3	2	2	2	2-3	2	2	2	2	2
10_{32}	2	2-3	2	2	2	2	2-3	2	2	0	2	2
10^*_{32}	2	2-3	2-3	2	2	2	2	2	2	2	2	2-3
10_{33}	2	2-3	2-3	2	2	2	2	2	2	2	0	2-3
10_{34}	2	2-3	2	2-3	2-3	2	2-3	2-3	2	2	2-3	0
10^*_{34}	2-3	2	2-3	2-3	2	2-3	2-4	2	2	2-3	2-3	**2**
10_{35}	2-3	2-**3**	2-4	2	2-3	2-3	2	2-3	2-3	2-3	2	2-4
10^*_{35}	2-3	2	2-3	2	2-3	2-3	2	2-3	2-3	2-3	2	2-4
10_{36}	2-3	2	2	2	2-3	2-3	2-3	2	2	2	2-3	2
10^*_{36}	2	2-4	3-4	2	2	2	2-3	2-3	2	2-3	2-3	2
10_{37}	2	2	2-3	2-3	2-3	2	2-4	2	2	2-3	2-3	**1**
10_{38}	2-3	2	2	2-3	2-3	2-4	2	2	2-3	2	2	2-3
10^*_{38}	2	2-4	3-4	2-3	2	2	2-3	2-3	2	2	2	2
10_{39}	3	2	2	2-3	3	2-4	2	2	2-3	2	2-3	2-3
10^*_{39}	2	3-4	4	2-3	2	2	3-4	3	2	2	2-3	2
10_{40}	2	2-4	3	2-3	2	2	2-4	2-3	2	2	2-3	**1**
10^*_{40}	2-3	2	2	2-3	2-3	2	2-3	2	2	2	2-3	2
10_{41}	2-3	2	2	2	2-3	2-3	2	2	2-3	2-3	2	2-3
10^*_{41}	2-3	2-**3**	3-4	2	2	2-3	2	2-3	2-3	2	2	2-3
10_{42}	2	2-3	2-3	2	2	2	2	2	2	2	2	2-3
10^*_{42}	2	2-3	2-3	2	2	2	2-3	2	2	2	2	2-3
10_{43}	2-3	2-3	2	2-3	2	2	2-3	2-3	2	2	2-3	**1**
10_{44}	2	2-3	2	2	2	2	2-3	2	2	2	2	2
10^*_{44}	2	2-3	3	2	2	2	2-3	2	2	2	2	2-3
10_{45}	2-3	2-3	2-3	2	2	2-3	2	2	2-3	2	2	2-3
$3_1 \# 7_1$	5	3-4	2-**3**	4-5	5	4-5	3-5	3-4	4	4	4-5	4
$3^*_1 \# 7^*_1$	**3**	5-6	6	4-5	**3**	4	5-6	5	4	4-5	4-5	4
$3_1 \# 7^*_1$	2-**3**	3-5	4	2-5	1-**3**	2-4	3-5	3-5	2-4	2-4	2-5	2-4
$3^*_1 \# 7_1$	3-5	2-4	2-**3**	2-5	3-**4**	2-5	2-5	2-4	2-4	2-4	2-5	2-4
$3_1 \# 7_2$	3	1-3	2	2-3	3	2-3	2-3	2-3	2	2	2-3	2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_{35}	10_{36}	10_{37}	10_{38}	10_{39}	10_{40}	10_{41}	10_{42}	10_{43}	10_{44}	10_{45}
10_{23}	2-3	2-3	2	2-3	3	2	2-3	2	2-3	2	2-3
10^*_{23}	2-3	2	2	2	2	2-3	2-3	2	2-3	2	2-3
10_{24}	2-**3**	2	2	2	2	2-4	2	2-3	2-3	2-3	2-3
10^*_{24}	2	2-4	2	2-4	3-4	2	2-**3**	2-3	2-3	2-3	2-3
10_{25}	2-4	2	2-3	2	2	3	2	2-3	2	2	2-3
10^*_{25}	2-3	3-4	2-3	3-4	4	2	3-4	2-3	2	3	2-3
10_{26}	2	2	2-3	2-3	2-3	2-3	2	2	2-3	2	2
10^*_{26}	2	2	2-3	2-3	2-3	2-3	2	2	2-3	2	2
10_{27}	2-3	2-3	2-3	2-3	3	2	2-3	2	2	2	2
10^*_{27}	2-3	2	2-3	2	2	2-3	2	2	2	2	2
10_{28}	2-3	2-3	2	2-4	2-4	2	2-3	2	2	2	2-3
10^*_{28}	2-3	2	2	2	2	2	2-3	2	2	2	2-3
10_{29}	2	2-3	2-4	2	2	2-4	2	2	2-3	2-3	2
10^*_{29}	2	2-3	2-4	2-3	3-4	2-3	2	2-3	2-3	2-3	2
10_{30}	2-3	2	2	2	2	2-3	2	2	2-3	2	2
10^*_{30}	2-3	2-3	2	2-3	3	2	2-3	2	2-3	2	2
10_{31}	2-3	2	2	2-3	2-3	2	2-3	2	2	2	2-3
10^*_{31}	2-3	2	2	2	2	2	2-3	2	2	2	2-3
10_{32}	2-3	2	2-3	2	2	2	2-3	2	2	2	2
10^*_{32}	2-3	2-3	2-3	2	2	2	2	2	2	2	2
10_{33}	2	2-3	2-3	2	2-3	2-3	2	2	2-3	2	2
10_{34}	2-4	2	**1**	2-3	2-3	**1**	2-3	2-3	**1**	2	2-3
10^*_{34}	2-4	2	**1**	2	2	2	2-3	2-3	**1**	2-3	2-3
10_{35}	0	2	2-4	2-3	2-3	2-4	2	2	2-3	2	2
10^*_{35}	**1**	2	2-4	2	2-3	2-4	**1**	2	2-3	2	2
10_{36}	2	0	2	2	**1**	2-3	2	2	2	**1**	2
10^*_{36}	2	2	2	2-3	3	2	2	2	2	2	2
10_{37}	2-4	2	0	2	2	2	2-3	2-3	2	2-3	2-4
10_{38}	2-3	2	2	0	**1**	2-4	2	2	2-3	2	2
10^*_{38}	2	2-3	2	2-**3**	3-4	2	2-3	2-3	2-3	2-3	2
10_{39}	2-3	**1**	2	**1**	0	3-4	2	2	2-3	2	2
10^*_{39}	2-3	3	2	3-4	4	2	3	2-3	2-3	3	2
10_{40}	2-4	2-3	2	2-4	3-4	0	2-4	2	2	2	2-3
10^*_{40}	2-4	2	2	2	2	2	2-3	2	2	2	2-3
10_{41}	2	2	2-3	2	2	2-4	0	2	2	2	2
10^*_{41}	**1**	2	2-3	2-3	3	2-3	2	2	2	2	2
10_{42}	2	2	2-3	2	2	2	2	0	2	2	2
10^*_{42}	2	2	2-3	2-3	2-3	2	2	2	2	2	2
10_{43}	2-3	2	2	2-3	2-3	2	2	2	0	2	2-3
10_{44}	2	**1**	2-3	2	2	2	2	2	2	0	2
10^*_{44}	2	2	2-3	2-3	3	2	2	2	2	2	2
10_{45}	2	2	2-4	2	2	2-3	2	2	2-3	2	0
$3_1 \# 7_1$	4-6	3-4	4	3-4	2-**3**	5	3-5	4-5	4	3-4	4-5
$3^*_1 \# 7^*_1$	4-6	5-6	4	5-6	6	**3**	5-6	4-5	4	5	4-5
$3_1 \# 7^*_1$	2-6	3-4	2-4	3-5	4-5	2-**3**	3-5	2-5	2-4	3-4	2-5
$3^*_1 \# 7_1$	2-6	2-4	2-4	2-4	1-**3**	3-**4**	1-5	2-5	2-4	2-4	2-5
$3_1 \# 7_2$	2-4	2	2-3	1-3	1-3	3	1-3	2-3	2	1-2	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 7_1$	$3_1^* \# 7_1$	$3_1 \# 7_2$	$3_1^* \# 7_2$	$3_1 \# 7_3$	$3_1^* \# 7_3$	$3_1 \# 7_4$
10_{23}	5	3-5	3	2-3	1-2	2	2-3
10_{23}^*	**3**	2-**3**	1-3	2-3	2-4	4	2-4
10_{24}	3-4	2-4	1-3	1-3	2-4	4-5	2-4
10_{24}^*	5-6	3-**5**	3-4	1-3	2-3	2-3	2-3
10_{25}	2-**3**	2-**3**	2	2-**3**	3	5	2-3
10_{25}^*	6	**4**	4	2	2-4	2-3	2-3
10_{26}	4-5	2-5	2-3	2-3	2-4	3-4	2-4
10_{26}^*	4-5	2-5	2-3	2-3	2-4	3-4	2-4
10_{27}	5	3-**4**	3	2	1-4	2-3	2-3
10_{27}^*	**3**	1-**3**	1-2	2-3	2-3	4	2-3
10_{28}	4-5	2-5	2-3	2-3	2-3	3	2
10_{28}^*	4	2-4	2-3	2-3	2-4	3-4	2-4
10_{29}	3-5	2-5	2-3	2-4	2-4	4-5	2-4
10_{29}^*	5-6	3-**5**	3-4	2-3	2-5	2-4	2-4
10_{30}	3-4	2-4	2-3	1-3	2-4	4	2-4
10_{30}^*	5	3-5	3	1-3	1-3	2-3	2
10_{31}	4	2-4	2	1-3	1-3	3	2-3
10_{31}^*	4	2-4	2-3	1-2	1-4	3	2-3
10_{32}	4	2-4	2	1-3	2-3	3-4	1-3
10_{32}^*	4-5	2-**4**	2-3	1-2	2-4	3	1-3
10_{33}	4-5	2-5	2-3	2-3	1-4	3-4	2-4
10_{34}	4	2-4	2	1-3	2-3	3	2-3
10_{34}^*	4	2-4	2	1-2	2-4	3	2-3
10_{35}	4-6	2-6	2-4	1-4	2-5	3-5	2-5
10_{35}^*	4-6	2-6	2-4	1-4	2-5	3-5	2-5
10_{36}	3-4	2-4	2	2	2-3	4-5	1-3
10_{36}^*	5-6	3-**4**	3-4	2	2-3	2-3	1-3
10_{37}	4	2-4	2-3	2-3	2-3	3	2-3
10_{38}	3-4	2-4	1-3	2-3	2-4	4-5	2-4
10_{38}^*	5-6	3-**5**	3-4	2-3	1-3	2-3	2-3
10_{39}	2-**3**	1-**3**	1-3	2-3	3-4	5	2-4
10_{39}^*	6	4-**5**	4	2-3	2-3	2-3	2-3
10_{40}	5	3-**4**	3	1-2	2-3	2-3	2-3
10_{40}^*	**3**	2-**3**	1-2	1-3	2-3	4	2-3
10_{41}	3-5	1-5	1-3	2-**3**	2-4	4-5	2-4
10_{41}^*	5-6	3-**5**	3-4	2-3	1-4	2-4	2-4
10_{42}	4-5	2-5	2-3	2-3	2-4	3-4	1-4
10_{42}^*	4-5	2-5	2-3	2-3	2-4	3-4	1-4
10_{43}	4	2-4	2	2	2-3	3	2-3
10_{44}	3-4	2-4	1-2	2-3	2-3	4	2-3
10_{44}^*	5	3-**4**	3	2	2-4	2-3	2-3
10_{45}	4-5	2-5	2-3	2-3	1-4	3-4	2-4
$3_1 \# 7_1$	0	2	**2**	4	5	7	4-5
$3_1^* \# 7_1^*$	8	**6**	6	4	**3**	**1**	**4**
$3_1 \# 7_1^*$	6	4-6	4	2-4	**1**	1-**3**	**2**
$3_1^* \# 7_1$	2	0	1-4	**2**	3-5	**5**	2-5
$3_1 \# 7_2$	**2**	1-4	0	2	3	5	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	0_1	3_1	4_1	5_1	5_2	6_1	6_2	6_3	$3_1 \# 3_1$	$3_1 \# 3_1^*$	7_1	7_2	7_3
$3_1^* \# 7_2^*$	2	3	2-3	4	3	2-3	3	2	4	2	5	3	1-**2**
$3_1 \# 7_2^*$	2	1	2-3	2	2	2-3	1-2	2	2	1-2	3	1-3	**2**
$3_1^* \# 7_2$	2	1-3	2-3	2-3	2	2-3	1-3	2	2-4	1-2	3	1	2-3
$3_1 \# 7_3$	2-3	2	1-4	3	2-3	2-4	2-3	1-3	3	2	4	2-4	1
$3_1^* \# 7_3^*$	2-3	2-3	1-4	2	1-2	2-4	1-4	1-3	2-4	2-3	**2**	1-**2**	3-4
$3_1 \# 7_3^*$	3	2	3-4	2	2	3-4	2-3	3	2	3	1-**2**	**2**	5
$3_1^* \# 7_3$	3	4	3-4	5	4	3-4	4	3	5	3	6	4	1
$3_1 \# 7_4$	2-3	2	2-4	2-3	2-3	1-4	2-3	2-3	2-3	1	3-4	2-4	**2**
$3_1^* \# 7_4^*$	2-3	2	2-4	2-3	2	1-4	2-3	2-3	2-3	1-3	**3**	2-3	2-4
$3_1 \# 7_4^*$	2-3	2	2-4	2-3	2	2-4	2-3	2-3	1	2-3	2-**3**	2-3	4-5
$3_1^* \# 7_4$	2-3	3-4	2-4	4-5	3-4	2-4	3-4	2-3	4-5	2-3	5-6	3-4	**2**
$3_1 \# 7_5$	3	2	3-4	2	2	3-4	2-3	3	1	3	**2**	**2**	5
$3_1^* \# 7_5^*$	3	4	3-4	5	4	3-4	4	3	5	3	6	4	2-3
$3_1 \# 7_5^*$	2-3	2	2-4	3	2-3	2-4	2-3	1-3	3	1	4	2-4	2-3
$3_1^* \# 7_5$	2-3	2	2-4	2	2	2-4	2-3	1-3	1-3	1-3	**2**	**2**	3-4
$3_1 \# 7_6$	2	1	2	1-2	2	2-3	1-2	2	1	2	2-3	1-**2**	4
$3_1^* \# 7_6^*$	2	3	2	4	3	2-3	3	2	4	2	5	3	1-3
$3_1 \# 7_6^*$	2	1	2	2	1-2	2-3	2	2	2	1	3	2-3	2-3
$3_1^* \# 7_6$	2	1-2	2	2-3	1-2	2-3	2-3	2	2-3	1-2	3-4	**2**	2-3
$3_1 \# 7_7$	2	1	2	2	2	1-3	2	2	1-2	1	2-3	2-3	3-4
$3_1^* \# 7_7^*$	2	2	2	3	2-3	1-3	2-3	2	3	1-2	4	2-3	2-3
$3_1 \# 7_7^*$	2	1	2	2	2	1-3	2	2	1	1-2	2-3	2-3	3-4
$3_1^* \# 7_7$	2	2-3	2	3-4	2-3	1-3	2-3	2	3-4	1-2	4-5	2-3	2-3
$3_1 \# 3_1 \# 4_1$	2-3	1-2	2	1-3	1-3	2-3	1-3	2-3	1	2-3	1-4	1-4	4-5
$3_1^* \# 3_1^* \# 4_1$	2-3	3-4	2	4-5	3-4	2-3	3	2-3	4-5	2-3	5-6	3-4	1-4
$3_1 \# 3_1^* \# 4_1$	2-3	1-2	1-2	2-3	1-3	1-3	1-3	2-3	2-3	1	3-4	1-4	2-4
$4_1 \# 6_1$	2	2-3	1	2-4	2-3	1	1-2	2-3	2-4	1-4	3-5	1-3	2-4
$4_1 \# 6_1^*$	2	2-3	1	2-4	2-3	1-2	1-2	2-3	2-4	1-4	3-5	1-3	2-4
$4_1 \# 6_2$	2	2	1	1-3	2-3	1-2	1	2-3	2-3	2-3	2-4	1-3	3-4
$4_1 \# 6_2^*$	2	2-3	1	3-4	2-3	1-2	2	2-3	3-4	2-3	4-5	2-3	2-4
$4_1 \# 6_3$	2	2	1	2-3	1-3	2	2	1	2-3	2-3	3-4	2-3	2-4
$5_1 \# 5_1$	4	3	4-5	2	**3**	4-5	3-4	4	2	4	2-3	3-4	6
$5_1^* \# 5_1^*$	4	5	4-5	6	5	4-5	5	4	6	4	7	5	2-3
$5_1 \# 5_1^*$	2-4	2-3	1-5	**2**	2-**3**	2-5	2-4	2-4	2-4	2	**3**	2-**4**	2-3
$5_1 \# 5_2$	3	2	3-4	1	2	3-4	2-3	3	2	3	2	2-3	5
$5_1^* \# 5_2^*$	3	4	3-4	5	4	3-4	4	3	5	3	6	4	2
$5_1 \# 5_2^*$	2-3	2	1-4	1	**2**	1-4	1-3	2-3	2-3	2	2	1-3	3
$5_1^* \# 5_2$	2-3	2-3	1-4	**3**	2	1-4	2-4	2-3	3-4	2-3	4	2-3	2
$5_2 \# 5_2$	2	2	2-3	**2**	1	2-3	2-3	2-3	2	2-3	1-3	2	4
$5_2^* \# 5_2^*$	2	3	2-3	4	3	2-3	3	2-3	4	2-3	5	3	2
$5_2 \# 5_2^*$	2	2	2-3	**2**	1	2-3	2-3	2-3	2-3	2	3	2	2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	7_4	7_5	7_6	7_7	$3_1 \# 4_1$	8_1	8_2	8_3	8_4	8_5	8_6	8_7	8_8	8_9
$3_1^* \# 7_2^*$	1-2	4	3	2	3-4	2-3	4	2-4	3-4	1-3	3-4	1-2	2	2-3
$3_1 \# 7_2^*$	1-3	2	2	1-3	1-2	2-3	2	1-4	2-3	2-4	2	2-3	1-2	2-3
$3_1^* \# 7_2$	1-2	**2**	**2**	1-2	1-4	2-3	2-4	1-4	2-4	2-3	2-4	2	1-2	2-3
$3_1 \# 7_3$	**2**	3	2-3	1-4	2-3	1-4	3	2-5	2-4	1-5	2-3	2-3	2-3	2-4
$3_1^* \# 7_3^*$	2-3	2-3	1-3	1-3	2-4	1-4	2-3	2-5	1-5	3-4	2-4	2-3	2-3	2-4
$3_1 \# 7_3^*$	4-5	2-3	2-3	3-4	2-3	3-4	2-3	3-5	2-4	5	2-3	4	3	3-4
$3_1^* \# 7_3$	**2**	5	4	3	4-5	3-4	5	3-5	4-5	1-3	4-5	2-3	3	3-4
$3_1 \# 7_4$	1	2-3	2-3	1-3	1-3	2-4	2-3	2-5	2-4	2-4	2-3	2-3	2-3	2-4
$3_1^* \# 7_4^*$	1-3	2-3	2-3	1-3	1-3	2-4	2-3	2-5	2-4	2-4	2-3	2-3	2-3	2-4
$3_1 \# 7_4^*$	3-5	2-3	2-3	2-4	1-3	2-4	2-3	2-5	2-4	4-5	2-3	3-4	2-3	2-4
$3_1^* \# 7_4$	1	4-5	3-4	2-3	3-5	2-4	4-5	2-5	3-5	1-2	3-5	2-3	2-3	2-4
$3_1 \# 7_5$	4-5	1	2-3	3-4	2-3	3-4	1-3	3-5	2-4	5	2-3	4	3	3-4
$3_1^* \# 7_5^*$	2-3	5	4	3	4-5	3-4	5	3-5	4-5	1-2	4-5	2-3	3	3-4
$3_1 \# 7_5^*$	2-3	3	2-3	1-3	2-3	1-4	3	1-5	2-4	1-4	2-3	2-3	2-3	1-4
$3_1^* \# 7_5$	2-3	1	1-3	1-3	2-3	1-4	1-3	1-5	1-4	3-4	2-3	2-3	2-3	1-4
$3_1 \# 7_6$	3-4	1-2	1	2-3	1	2-3	1-2	2-4	1-3	4	1-2	3	2	2-3
$3_1^* \# 7_6^*$	1-2	4	3	2	3	2-3	4	2-4	3	1-2	3-4	1-2	2	2-3
$3_1 \# 7_6^*$	1-3	2	1-2	1-3	1	2-3	2	2-4	1-3	2-4	2	2-3	1-2	2-3
$3_1^* \# 7_6$	1-2	2-3	1	1-2	1-3	2-3	2-3	2-4	1-3	2-3	2-3	2	1-2	2-3
$3_1 \# 7_7$	2-3	2	2	1	1	2-3	2	2-4	2-3	3-4	2	2-3	2	2-3
$3_1^* \# 7_7^*$	1-2	3	2-3	1-2	2-3	2-3	3	2-4	2-3	1-3	2-3	2	2	2-3
$3_1 \# 7_7^*$	2-4	2	2	1-3	1	2-3	2	2-4	2-3	3-4	2	2-3	2	2-3
$3_1^* \# 7_7$	1-2	3-4	2-3	1	2-3	2-3	3-4	2-4	2-3	1-2	2-4	2	2	2-3
$3_1 \# 3_1 \# 4_1$	3-5	1-3	1-3	2-3	1	2-4	1-3	2-4	1-3	4	1-3	3-4	2-3	2-4
$3_1^* \# 3_1^* \# 4_1$	1-3	4-5	3	2-3	3	2-4	4	2-4	3	1-2	3-4	1-3	2-3	2-4
$3_1 \# 3_1^* \# 4_1$	1-3	2-3	1-3	1-3	1	2-4	2-3	2-4	1-3	2-4	1-3	1-3	2-3	2-4
$4_1 \# 6_1$	2-4	2-4	1-2	2	2	2	2-3	2	1-2	2-3	2	2-3	2-4	2-3
$4_1 \# 6_1^*$	2-4	2-4	1-2	2	2	2-3	2-3	2	1-2	2-3	2-3	2-3	2-4	2-3
$4_1 \# 6_2$	2-4	2-3	1-2	2	1-2	2-3	2	2-3	1-2	3	2	2-3	2-3	2
$4_1 \# 6_2^*$	1-3	3-4	2	2	2	2-3	3	2-3	2	1-2	2-3	2-3	2-3	2
$4_1 \# 6_3$	1-3	2-3	2	2	1-2	1-3	2-3	2-3	2	2-3	2-3	2	2	2-3
$5_1 \# 5_1$	5-6	2-3	3-4	4-5	3-4	4-5	2-3	4-6	3-5	6	3-4	5	4	4-5
$5_1^* \# 5_1^*$	3-4	6	5	4	5-6	4-5	6	4-6	5-6	2-3	5-6	3	4	4-5
$5_1 \# 5_1^*$	1-4	2-**3**	2-4	2-4	1-4	2-5	2-**3**	2-6	2-5	2-5	2-4	2-3	1-4	1-5
$5_1 \# 5_2$	4-5	2	2-3	3-4	2-3	3-4	2	3-5	2-4	5	2-3	4	3	3-4
$5_1^* \# 5_2^*$	2-3	5	4	3	4-5	3-4	5	3-5	4-5	1-3	4-5	2	3	3-4
$5_1 \# 5_2^*$	2-3	2	1-3	1-4	1-3	2-4	2	2-5	1-4	3-5	2-3	2-4	2-3	2-4
$5_1^* \# 5_2$	1-3	3	2-3	1-3	2-4	2-4	3-4	2-5	2-5	1-4	2-4	2	2-3	2-4
$5_2 \# 5_2$	3-4	2	2	2-3	2-3	2-3	2-3	2-4	2-4	4	2-3	3	2-3	2-3
$5_2^* \# 5_2^*$	2	4	3	2-3	3-4	2-3	4	2-4	3-4	1-3	3-4	2-3	2	2-3
$5_2 \# 5_2^*$	2	2	2	1-3	2-3	2-3	2-3	2-4	2-4	2-4	2-3	2-3	2	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	8_{10}	8_{11}	8_{12}	8_{13}	8_{14}	8_{15}	8_{16}	8_{17}	8_{18}	8_{19}	8_{20}	8_{21}
$3_1^* \# 7_2^*$	1-3	3	2-4	2-3	3	4	3	2	2	1-3	2-3	3
$3_1 \# 7_2^*$	1-3	2-3	1-4	1-3	1-2	2-3	1-2	1-2	1-2	3-4	1-3	1-3
$3_1^* \# 7_2$	1-3	2-3	1-4	1-3	1-3	2-3	1-3	1-2	1-2	3	1-3	1-3
$3_1 \# 7_3$	2-3	2-4	2-5	2-4	2-3	3-4	2-3	1-3	1-3	2-3	2-3	2-4
$3_1^* \# 7_3^*$	2-4	2-3	2-5	2-3	1-3	1-3	2-3	1-3	1-3	4	2-3	1-4
$3_1 \# 7_3^*$	4	2-3	3-5	3	2-3	1-3	2-3	3	3	6	3	2-3
$3_1^* \# 7_3$	2-3	4	3-5	3-4	4	5	4	3	3	2-3	3-4	4
$3_1 \# 7_4$	2	2-4	2-5	2-4	2-3	2-4	2-3	2-3	1-3	3-4	1-2	1-4
$3_1^* \# 7_4^*$	2-4	2-3	2-5	2-3	2-3	2-3	2-3	2-3	1-3	3-4	1-3	1-4
$3_1 \# 7_4^*$	3-4	2-3	2-5	2-3	2-3	2	2-3	2-3	2-3	5-6	2-3	1-2
$3_1^* \# 7_4$	2-3	3-4	2-5	2-4	3-4	4-5	3-4	2-3	2-3	2	2-4	3-4
$3_1 \# 7_5$	4	2-3	3-5	3	2-3	1-2	2-3	3	3	6	3	2
$3_1^* \# 7_5^*$	2-3	4	3-5	3-4	4	5	4	3	3	2	3-4	4
$3_1 \# 7_5^*$	2	2-4	2-5	2-4	2-3	3-4	2-3	2-3	2-3	2-3	1-2	2-4
$3_1^* \# 7_5$	2-4	2-3	2-5	2-3	2-3	1-3	1-3	2-3	2-3	4	1-3	1-4
$3_1 \# 7_6$	3	2-3	2-3	2-3	1-2	1-2	1-2	2	2	5	2-3	1-2
$3_1^* \# 7_6^*$	1-3	3	2-3	2-3	3	4	3	2	2	1-2	2-3	3
$3_1 \# 7_6^*$	1-2	2-3	1-3	1-3	2	2-3	2	2	1-2	3-4	1-2	1-3
$3_1^* \# 7_6$	1-3	2-3	1-3	1-3	2-3	2-3	2-3	2	1-2	3	1-3	1-3
$3_1 \# 7_7$	2	1-3	2-3	2-3	2	1-3	2	2	1-2	4	1-2	1-3
$3_1^* \# 7_7^*$	1-3	2-3	2-3	2-3	2-3	3-4	2-3	2	1-2	2-3	1-3	2-3
$3_1 \# 7_7^*$	2-3	1-3	2-3	2-3	2	1-2	2	2	1-2	4-5	1-3	1-2
$3_1^* \# 7_7$	1-3	2-3	2-3	2-3	2-3	3-4	2-3	2	1-2	2	1-3	2-3
$3_1 \# 3_1 \# 4_1$	3-4	1-4	2-3	2-3	1-3	1-2	1-3	2-3	2-3	5-6	2-4	1-2
$3_1^* \# 3_1^* \# 4_1$	1-4	3-4	2-3	2-3	3	4-5	3	2-3	2-3	1-2	2-4	3-4
$3_1 \# 3_1^* \# 4_1$	1-2	1-4	1-3	1-3	1-3	2-4	1-3	1-3	1-3	3-4	1-2	1-4
$4_1 \# 6_1$	2-4	2	1-2	1-2	1-2	2-4	1-2	2-3	1-4	3-5	1-3	2-3
$4_1 \# 6_1^*$	2-4	2-3	1-2	1-2	1-2	2-4	1-2	2-3	1-4	3-5	1-3	2-3
$4_1 \# 6_2$	2-4	2	2	2	1-2	2-4	1-2	2-3	1-3	4-5	1-3	1-2
$4_1 \# 6_2^*$	2-4	2-3	2	2	2	3-4	2	2	1-3	2-4	1-3	2-3
$4_1 \# 6_3$	2	2-3	2	2	2	2-4	2	1-3	1-3	3-4	2	1-3
$5_1 \# 5_1$	5	3-**4**	4-6	**4**	3-4	2-3	3-4	4	4	7	**4**	3
$5_1^* \# 5_1^*$	3	5	4-6	4-5	5	6	5	4	4	2-3	4-5	5
$5_1 \# 5_1^*$	2-3	2-**4**	2-6	2-**4**	2-4	2-**3**	1-4	2-4	1-4	3	2-3	1-5
$5_1 \# 5_2$	4	2-3	3-5	3	2-3	2	2-3	3	3	6	3	2-3
$5_1^* \# 5_2^*$	2	4	3-5	3-4	4	5	4	3	3	2	3-4	4
$5_1 \# 5_2^*$	2-3	2-**3**	1-5	1-**3**	1-3	2	1-3	2-3	1-3	**4**	1-3	1-4
$5_1^* \# 5_2$	2	2-3	1-5	1-3	2-3	3	2-3	2-3	1-3	2	1-3	2-4
$5_2 \# 5_2$	3-4	2	2-4	2	2	2	1-2	2-3	2-3	5	2	2-3
$5_2^* \# 5_2^*$	2	3	2-4	2-3	3	4	3-4	2-3	2-3	2-3	2-3	3
$5_2 \# 5_2^*$	2	2	2-4	2	2	2	1-2	2-3	2-3	**3**	2	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 5_1$	$3_1^* \# 5_1$	$3_1 \# 5_2$	$3_1^* \# 5_2$	$4_1 \# 4_1$	9_1	9_2	9_3	9_4	9_5
$3_1^* \# 7_2^*$	5	**3**	4	2	2-4	6	3	1-3	4	1-2
$3_1 \# 7_2^*$	3	2-3	2	1-3	2-4	4	2-3	3	2-4	2
$3_1^* \# 7_2$	3-4	**2**	2-3	1	2-4	4	2	3-4	2	2-3
$3_1 \# 7_3$	4	2-4	3	1-4	2-5	5	2-4	2	3-5	2-3
$3_1^* \# 7_3^*$	2-3	1	1-3	1	2-5	3	1-3	4-5	1-2	2-4
$3_1 \# 7_3^*$	1	2-3	1	3	3-5	2-3	2-3	6	1-2	4-5
$3_1^* \# 7_3$	6	**4**	5	3	3-5	7	4	1-2	5	2-3
$3_1 \# 7_4$	3-4	1-4	2-3	1-3	2-5	4-5	1-4	3	2-5	2
$3_1^* \# 7_4^*$	3-4	1-**2**	2-3	1	2-5	**4**	1-4	3-5	2-3	2-4
$3_1 \# 7_4^*$	1-2	1-4	1	2-3	2-5	2-**4**	1-4	5-6	1-3	3-5
$3_1^* \# 7_4$	5-6	3-**4**	4-5	2-3	2-5	6-7	3-4	2-3	4-5	2
$3_1 \# 7_5$	1	2-3	1	3	3-5	2-3	2-3	6	1-**3**	4-5
$3_1^* \# 7_5^*$	6	**4**	5	3	3-5	7	4	1-3	5	2-3
$3_1 \# 7_5^*$	4	2-4	3	1-3	2-5	5	2-4	2-3	3-5	2-3
$3_1^* \# 7_5$	2-3	1	1-3	1	2-5	3	1-3	4-5	1-**3**	2-4
$3_1 \# 7_6$	2	2-3	1	2-3	2-3	2-4	2-3	5	1-3	3-4
$3_1^* \# 7_6^*$	5	**3**	4	2	2-3	6	3	1-4	4	1-3
$3_1 \# 7_6^*$	3	2-3	2	1-3	2-3	4	2-3	3-4	2-4	2-3
$3_1^* \# 7_6$	3-4	**2**	2-3	1	2-3	4-5	2-3	3-4	2-3	2-3
$3_1 \# 7_7$	2-3	2-3	1-2	1-3	2-3	3-4	2-3	4-5	1-4	2-4
$3_1^* \# 7_7^*$	4	2-**3**	3	1-2	2-3	5	2-3	2-4	3-4	2-3
$3_1 \# 7_7^*$	2	2-3	1-2	1-3	2-3	3-4	2-3	4-5	1-4	2-4
$3_1^* \# 7_7$	4-5	2-**3**	3-4	1-2	2-3	5-6	2-3	2-4	3-4	2-3
$3_1 \# 3_1 \# 4_1$	1-2	1-4	1-2	2-4	2-3	2-5	1-4	5-6	1-5	3-5
$3_1^* \# 3_1^* \# 4_1$	5-6	3-**4**	4-5	2-3	2-3	6-7	3-4	1-5	4-5	1-4
$3_1 \# 3_1^* \# 4_1$	3-4	1-4	2-3	1-3	1-3	4-5	1-4	3-5	2-5	1-4
$4_1 \# 6_1$	3-5	2-5	2-4	2-4	1	4-6	2-3	3-5	2-4	2-4
$4_1 \# 6_1^*$	3-5	2-5	2-4	2-4	1	4-6	2-3	3-5	2-4	2-4
$4_1 \# 6_2$	2-4	1-4	1-3	2-4	1	3-5	1-3	4-5	1-4	2-4
$4_1 \# 6_2^*$	4-5	2-**4**	3-4	2-3	1	5-6	2-3	2-5	3-4	2-4
$4_1 \# 6_3$	3-4	1-4	2-3	2-3	2	4-5	1-3	3-5	2-4	2-4
$5_1 \# 5_1$	1	3	**2**	**4**	4-6	2-4	3-5	7	2-4	5-6
$5_1^* \# 5_1^*$	7	**5**	6	4	4-6	8	5	2-4	6	3-4
$5_1 \# 5_1^*$	**3**	1-**3**	2-4	2-4	1-6	**4**	1-5	3-4	2-**4**	2-4
$5_1 \# 5_2$	1-2	2	1	3	3-5	1-3	2-4	6	1-3	4-5
$5_1^* \# 5_2^*$	6	**4**	5	3	3-5	7	4	1-3	5	2-3
$5_1 \# 5_2^*$	2	1-2	1-3	1-**3**	1-5	3	1-4	4	1-3	2-3
$5_1^* \# 5_2$	**4**	**2**	3	1	1-5	5	2-4	2-3	3-4	2-3
$5_2 \# 5_2$	**2**	2-**3**	1	2	2-4	2-4	2-3	5	1-3	3-4
$5_2^* \# 5_2^*$	5	3-**4**	4	2-3	2-4	6	3	2-3	4	2
$5_2 \# 5_2^*$	**3**	2-**3**	2	1-2	2-4	4	2-3	3	2-3	2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	9_6	9_7	9_8	9_9	9_{10}	9_{11}	9_{12}	9_{13}	9_{14}	9_{15}	9_{17}	9_{18}	9_{19}
$3_1^* \# 7_2^*$	5	4	3-4	5	1-3	1-3	3	2-3	2	1-2	3	4	2-3
$3_1 \# 7_2^*$	3	2	1-2	3	2-3	2-3	2-3	2-**3**	1-3	1-2	1-3	2-3	1-3
$3_1^* \# 7_2$	3	2	1-3	**3**	2-3	2-3	2	2-3	1-2	1-3	1-3	2	1-3
$3_1 \# 7_3$	4	3	2-3	4	1-2	1-2	2-4	1-2	2-3	1-3	2-4	3-4	1-4
$3_1^* \# 7_3^*$	2-3	2-**3**	1-4	2	3-4	3-4	2-**3**	3-4	2-3	2-4	1-4	2	1-4
$3_1 \# 7_3^*$	2-3	2-3	2-3	1-2	5-6	5	2-**3**	5-6	3-4	4-5	2-4	2	3-4
$3_1^* \# 7_3$	6	5	4-5	6	1-2	1-2	4	1-2	3	2-3	4	5	3-4
$3_1 \# 7_4$	3-4	2-3	2-3	3-4	2	2-3	2-4	2	2-3	1-3	1-4	2-4	2-4
$3_1^* \# 7_4^*$	3-4	2-3	2-3	**3**	2-4	2-4	2-4	2-4	2-3	1-4	1-4	2-3	2-4
$3_1 \# 7_4^*$	2-4	2-3	2-3	2-**3**	4-6	4-5	2-4	4-6	2-4	3-5	1-4	2-3	2-4
$3_1^* \# 7_4$	5-6	4-5	3-5	5-6	2	2-3	3-4	2	2-3	1-3	3-4	4-5	2-4
$3_1 \# 7_5$	2	2	2-3	2	5-6	5	2-3	5-6	3-4	4-5	2-4	2	3-4
$3_1^* \# 7_5^*$	6	5	4-5	6	1-4	1-3	4	2	3	2-3	4	5	3-4
$3_1 \# 7_5^*$	4	3	2-3	4	1-4	1-3	2-4	2	2-3	2-3	2-4	3-4	2-4
$3_1^* \# 7_5$	2	2	2-3	2	3-4	3-4	1-3	3-4	2-3	2-4	2-4	2	2-4
$3_1 \# 7_6$	2-3	2	1-2	1-3	4-5	4	2	4-5	2-3	3	1-3	2-3	2-3
$3_1^* \# 7_6^*$	5	4	3	5	1-3	1-2	3	1-3	2	1-2	3	4	2-3
$3_1 \# 7_6^*$	3	2	2	3	2-4	2	2-3	2-4	2-3	1-2	1-3	2-3	1-3
$3_1^* \# 7_6$	3-4	2-3	2	3-4	2-3	2-3	2	2-3	2	1-3	1-3	2-3	1-3
$3_1 \# 7_7$	2-3	2	2	2-3	3-4	3-4	2-3	3-4	2	2-3	1-2	2-3	2
$3_1^* \# 7_7^*$	4	3	2-3	4	1-3	1-3	2-3	2-3	2	1-3	2-3	3-4	2-3
$3_1 \# 7_7^*$	2-3	2	2	2-3	3-5	3-4	2-3	3-5	2-3	2-3	1-3	2-3	2-3
$3_1^* \# 7_7$	4-5	3-4	2-3	4-5	1-3	1-3	2-3	2-3	2	1-3	2	3-4	2
$3_1 \# 3_1 \# 4_1$	1-4	2-3	1-3	1-4	4-6	4	1-4	4-6	2-4	3	1-3	2-4	2-3
$3_1^* \# 3_1^* \# 4_1$	5-6	4-5	3	5-6	1-4	1-4	3-4	1-4	2-3	1-3	3	4-5	2-3
$3_1 \# 3_1^* \# 4_1$	3-4	2-3	1-3	3-4	2-4	2-4	1-4	2-4	2-3	1-3	1-3	2-4	1-3
$4_1 \# 6_1$	3-5	2-4	1-2	3-5	2-5	2-3	1-2	2-5	2-3	2	2	2-4	1-2
$4_1 \# 6_1^*$	3-5	2-4	1-2	3-5	2-5	2-3	1-3	2-5	2	2	2	2-4	1-2
$4_1 \# 6_2$	2-4	1-3	1-2	2-4	3-5	3	1-3	3-5	2-3	2	2	1-4	2
$4_1 \# 6_2^*$	4-5	3-4	2	4-5	2-4	2-3	2-3	2-4	2-3	2	2	3-4	2
$4_1 \# 6_3$	3-4	2-3	2	3-4	2-4	2-3	2-3	2-4	1-3	2	2	2-4	2
$5_1 \# 5_1$	2-3	2-4	3-4	2-4	6-7	6	3-5	6-7	4-5	5-6	3-5	2-4	4-5
$5_1^* \# 5_1^*$	7	6	5-6	7	2-4	2-3	5	2-3	4	3-**4**	5	6	4-5
$5_1 \# 5_1^*$	**3**	2-4	2-4	3-**4**	2-4	2-3	1-5	2-3	2-4	2-**4**	2-5	2-**4**	2-5
$5_1 \# 5_2$	2	2-3	2-3	1-3	5-6	5	2-4	5-6	3-4	4-5	2-4	1-3	3-4
$5_1^* \# 5_2^*$	6	5	4-5	6	2-3	2	4	2	3	2-3	4	5	3-4
$5_1 \# 5_2^*$	2	2-3	1-3	2-3	3-4	3	1-4	3-4	2-3	2-3	2-4	1-3	2-4
$5_1^* \# 5_2$	4	3-4	2-4	4	2-3	2	2-4	2	2-3	2-**3**	2-4	3	2-4
$5_2 \# 5_2$	2-3	2-3	2-3	2-3	4-5	4	1-3	4-5	2-3	3-4	2-4	2	2-3
$5_2^* \# 5_2^*$	5	4	3-4	5	2-3	2	3	2-3	2	2	3-4	4	2-3
$5_2 \# 5_2^*$	3	2-3	2-3	3	2-3	2	1-3	2-3	2	2	2-4	2	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	9_{20}	9_{21}	9_{23}	9_{26}	9_{27}	9_{31}	$3_1 \# 6_1$	$3_1^* \# 6_1$	$3_1 \# 6_2$	$3_1^* \# 6_2$
$3_1^* \# 7_2^*$	4	1-2	4	1-2	2-3	3	3-4	1-2	4	2
$3_1 \# 7_2^*$	2	2-3	2-3	2-3	1-2	1-2	1-2	1-4	2	1-3
$3_1^* \# 7_2$	2-3	2	2-3	2	1-3	1-3	1-4	1-2	2-4	1-2
$3_1 \# 7_3$	3	2-3	3-4	1-3	2-3	2-3	2-3	2-4	3	1-4
$3_1^* \# 7_3^*$	2-3	2-3	2-3	2-3	2-4	2-3	2-4	2-3	1-4	1-3
$3_1 \# 7_3^*$	2-3	4	2-3	4	3	2-3	2-3	4-5	1-3	3-4
$3_1^* \# 7_3$	5	2-3	5	2-3	3-4	4	4-5	2-3	5	3
$3_1 \# 7_4$	2-3	2	2-4	2-3	2-3	2-3	2-3	2-3	2-3	2-3
$3_1^* \# 7_4^*$	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3
$3_1 \# 7_4^*$	2-3	3-4	1-3	3-4	2-3	2-3	2-3	3-5	2	2-4
$3_1^* \# 7_4$	4-5	2	4-5	2-3	2-4	3-4	3-5	2-3	4-5	2-3
$3_1 \# 7_5$	2	4	2	4	3	2-3	2-3	4-5	1-2	3-4
$3_1^* \# 7_5^*$	5	2-3	5	2-3	3-4	4	4-5	2-3	5	3
$3_1 \# 7_5^*$	3	1-3	3-4	1-3	1-3	2-3	2-3	2-3	3	1-3
$3_1^* \# 7_5$	2	2-3	2	2-3	1-3	2-3	2-3	2-3	1-3	1-3
$3_1 \# 7_6$	2	3	2-3	3	2	2	1-2	3-4	1-2	2-3
$3_1^* \# 7_6^*$	4	2	4	1-2	2-3	3	3-4	1-2	4	2
$3_1 \# 7_6^*$	2	1-2	2-3	2-3	1-2	1-2	1-2	1-3	2	1-3
$3_1^* \# 7_6$	2	1-2	2-3	2	1-2	1-3	1-3	1-2	2-3	1-2
$3_1 \# 7_7$	2	2-3	1-3	2	2	2	1-2	2-3	1-2	1-3
$3_1^* \# 7_7^*$	3	2	3-4	2	2-3	2-3	2-3	1-2	3	1-2
$3_1 \# 7_7^*$	2	2-3	1-3	2-3	2	2	1-2	2-4	1-2	1-3
$3_1^* \# 7_7$	3-4	2	3-4	2	2-3	2-3	2-4	1-2	3-4	1-2
$3_1 \# 3_1 \# 4_1$	2-3	3-4	1-4	3-4	2-3	1-3	1-2	3-4	1-2	2-4
$3_1^* \# 3_1^* \# 4_1$	4	1-3	4-5	1-3	2-3	3-4	3-4	1-2	4	2
$3_1 \# 3_1^* \# 4_1$	2-3	1-3	2-4	1-3	1-3	1-3	1-2	1-2	2	1-2
$4_1 \# 6_1$	2-3	2-3	2-4	2-3	1-2	1-4	2	2	2-3	2-3
$4_1 \# 6_1^*$	2-3	2-3	2-4	2-3	1-2	1-4	2-3	2-3	2-3	2-3
$4_1 \# 6_2$	1-2	2-3	1-4	2-3	1-2	1-3	2-3	2-3	2	2
$4_1 \# 6_2^*$	3	2-3	3-4	2	1-2	2-4	2-3	2-3	3	2-3
$4_1 \# 6_3$	2-3	2-3	2-4	1-3	2	2	2-3	2-3	2-3	1-3
$5_1 \# 5_1$	2-4	5	2-3	5	4	3	3-4	5-6	2-3	4-5
$5_1^* \# 5_1^*$	6	3-4	6	3	4-5	5	5-6	3-4	6	4
$5_1 \# 5_1^*$	2-4	2-4	2-**3**	2-3	2-4	1-**3**	2-4	2-4	2-4	2-4
$5_1 \# 5_2$	1-3	4	1-2	4	3	2	2-3	4-5	2-3	3-4
$5_1^* \# 5_2^*$	5	2-3	5	2	3-4	4	4-5	2-3	5	3
$5_1 \# 5_2^*$	1-3	2-3	1-2	2-3	2-3	1-2	2-3	2-4	2-3	2-4
$5_1^* \# 5_2$	3	2-3	3	2	2-4	2-3	2-4	2-3	3-4	2-3
$5_2 \# 5_2$	2	3	2	3	2-3	2	2-3	3-4	2-3	2-4
$5_2^* \# 5_2^*$	4	2	4	2	2-3	3-4	3-4	2-3	4	2-3
$5_2 \# 5_2^*$	2	2	2	2	1-3	2	2-3	2-3	2-3	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 6_3$	$3_1 \# 3_1 \# 3_1$	$3_1 \# 3_1^* \# 3_1^*$	$4_1 \# 5_1$	$4_1 \# 5_2$	10_1	10_2
$3_1^* \# 7_2^*$	3	5	1-3	4-5	3-4	2-3	5
$3_1 \# 7_2^*$	2	3	1-3	2-3	1-3	1-3	3
$3_1^* \# 7_2$	2-3	3-5	1-3	2-4	1-3	1-3	3-4
$3_1 \# 7_3$	2-3	4	2-3	3-4	2-4	2-4	4
$3_1^* \# 7_3^*$	1-4	2-5	2-4	2-3	2-3	2-4	2-3
$3_1 \# 7_3^*$	2-3	2-3	4	2-3	2-3	3-4	2-3
$3_1^* \# 7_3$	4	6	2-3	5-6	4-5	3-4	6
$3_1 \# 7_4$	2	3-4	2	2-4	2-4	2-4	3-4
$3_1^* \# 7_4^*$	2-3	3-4	2-4	2-4	2-3	2-4	3-4
$3_1 \# 7_4^*$	2	2	3-4	2-4	2-3	2-4	2-4
$3_1^* \# 7_4$	3-4	5-6	2	4-6	3-5	2-4	5-6
$3_1 \# 7_5$	2	2	4	2-3	2-3	3-4	2-3
$3_1^* \# 7_5^*$	4	6	2	5-6	4-5	3-4	6
$3_1 \# 7_5^*$	2	4	2	3-4	2-4	1-4	4
$3_1^* \# 7_5$	2-3	2-4	2-4	2-3	2-3	1-4	2-3
$3_1 \# 7_6$	2	1-2	3	2-3	1-3	2-3	1-3
$3_1^* \# 7_6^*$	3	5	1-2	**4**	3	2-3	5
$3_1 \# 7_6^*$	2	3	1-2	2-3	2-3	2-3	3
$3_1^* \# 7_6$	2-3	3-4	1-3	2-4	2-3	2-3	3-4
$3_1 \# 7_7$	2	2-3	2	2-3	2-3	2-3	2-3
$3_1^* \# 7_7^*$	2-3	4	1-3	3-4	2-3	2-3	4
$3_1 \# 7_7^*$	2	2	2-3	2-3	2-3	2-3	2-3
$3_1^* \# 7_7$	2-3	4-5	1-2	3-**4**	2-3	2-3	4-5
$3_1 \# 3_1 \# 4_1$	2	1-2	3-4	1-4	1-3	2-4	1-4
$3_1^* \# 3_1^* \# 4_1$	3-4	5-6	1-2	**4**	3	2-4	5
$3_1 \# 3_1^* \# 4_1$	2	3-4	1-2	2-4	1-3	2-4	3-4
$4_1 \# 6_1$	2-4	3-5	2-5	2-**3**	1-2	2-3	3-4
$4_1 \# 6_1^*$	2-4	3-5	2-5	2-**3**	1-2	2-3	3-4
$4_1 \# 6_2$	1-3	2-4	2-4	1-**3**	1-2	2-3	2-3
$4_1 \# 6_2^*$	2-4	4-5	2-4	**3**	2	2-3	4
$4_1 \# 6_3$	2	3-4	2-4	2-**3**	2	2-3	3-4
$5_1 \# 5_1$	3	2-3	5	2-3	3-**4**	4-5	2-3
$5_1^* \# 5_1^*$	5	7	3	6-7	5-6	4-5	7
$5_1 \# 5_1^*$	2-3	3-5	2-3	2-**3**	1-**4**	2-5	**3**
$5_1 \# 5_2$	2-3	2-3	4	1-2	2-3	3-4	2
$5_1^* \# 5_2^*$	4	6	2-3	5-6	4-5	3-4	6
$5_1 \# 5_2^*$	1-3	2-4	2-3	1-2	1-**3**	2-4	2
$5_1^* \# 5_2$	2-4	4-5	2-4	3-**4**	2-3	2-4	**4**
$5_2 \# 5_2$	2-3	2-3	3-4	2-**3**	2	2-3	2-**3**
$5_2^* \# 5_2^*$	3-4	5	2-3	4-5	3-4	2-3	5
$5_2 \# 5_2^*$	2-3	3-4	2-3	2-**3**	2	2-3	**3**

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_3	10_4	10_5	10_6	10_7	10_8	10_9	10_{10}	10_{11}	10_{12}	10_{13}	10_{14}
$3_1^* \# 7_2^*$	2-4	3-4	1-2	4-5	3	4	2	2	3-5	1-3	2-4	4
$3_1 \# 7_2^*$	1-4	2-4	2-4	2-3	2-3	2-3	2-3	2	2-3	2-3	2-4	2
$3_1^* \# 7_2$	1-4	2-4	2	2-4	2	2-4	2	2-3	2-5	2-3	2-4	2-**3**
$3_1 \# 7_3$	2-5	2-5	1-3	3-4	2-4	3-4	1-4	2-**3**	2-4	1-2	2-5	3
$3_1^* \# 7_3^*$	2-5	2-5	3	1-3	2-**3**	2-4	2-3	2-4	2-5	2-4	2-5	1-2
$3_1 \# 7_3^*$	3-5	2-5	5	1-3	2-**3**	2-4	4	3-4	2-4	4	3-5	1-2
$3_1^* \# 7_3$	3-5	4-5	1-3	5-6	4	5	2-3	**3**	4-6	2	3-5	5
$3_1 \# 7_4$	2-5	2-5	2-3	2-4	2-4	2-4	2-3	1-4	2-4	2-**3**	2-5	2-3
$3_1^* \# 7_4^*$	2-5	2-5	2-3	2-4	2-4	2-4	2-3	1-4	2-4	2-4	2-5	2-3
$3_1 \# 7_4^*$	2-5	2-5	4-5	2-4	2-4	2-4	3-4	2-4	2-4	3-4	2-5	2-3
$3_1^* \# 7_4$	2-5	3-5	2-3	4-6	3-4	4-5	2-3	2-4	3-6	2-**3**	2-5	4-5
$3_1 \# 7_5$	3-5	2-5	5	2-3	2-**3**	2-4	4	3-4	2-4	4	3-5	2-3
$3_1^* \# 7_5^*$	3-5	4-5	1-3	5-6	4	5	2-3	**3**	4-6	2-3	3-5	5
$3_1 \# 7_5^*$	2-5	2-5	1-3	3-4	2-4	3-4	2-3	2-**3**	2-4	1-3	2-5	3
$3_1^* \# 7_5$	2-5	2-5	3	2-3	1-**3**	2-4	2-3	2-4	1-4	2-4	2-5	2-3
$3_1 \# 7_6$	2-4	2-4	4	1-3	2-3	2-3	3	2-3	2-3	3	2-4	1-2
$3_1^* \# 7_6^*$	2-4	3-4	1-2	4-5	3	4	2	2-3	3-4	1-3	2-4	4
$3_1 \# 7_6^*$	1-4	2-4	2-3	2-3	1-3	2-3	2-3	2-3	1-3	2-3	1-4	2
$3_1^* \# 7_6$	1-4	2-4	2	2-4	1-3	2-4	2	2-3	1-4	2-3	1-4	2-3
$3_1 \# 7_7$	2-4	1-4	3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-4	1-2
$3_1^* \# 7_7^*$	2-4	2-4	1-2	3-4	2-3	3-4	2	2-3	2-4	2-3	2-4	3
$3_1 \# 7_7^*$	2-4	1-4	3-4	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-4	1-2
$3_1^* \# 7_7$	2-4	2-4	1-2	3-5	2-3	3-4	2	2-3	2-4	2-3	2-4	3-4
$3_1 \# 3_1 \# 4_1$	2-5	1-4	4-5	1-4	1-4	2-4	3-4	2-3	1-4	3-4	2-4	1-3
$3_1^* \# 3_1^* \# 4_1$	2-5	3-4	1-3	4-5	3-4	4	2-3	2-3	3-4	1-4	2-4	4
$3_1 \# 3_1^* \# 4_1$	2-5	1-4	2-3	2-4	1-4	2-4	2-3	1-3	1-4	1-4	2-4	2-3
$4_1 \# 6_1$	2-3	2-3	2-4	2-3	2-3	2-3	2-3	1-2	2-3	2-4	2	2-3
$4_1 \# 6_1^*$	2-3	2	2-4	2-4	2-3	2-3	2-3	1-2	2-3	2-4	2-3	2-3
$4_1 \# 6_2$	2-4	2-3	3-4	2-3	2-3	1-2	2-3	1-2	2-3	2-4	2-3	2-3
$4_1 \# 6_2^*$	2-4	2-3	2-3	3-4	2-3	3	1-3	1-2	2-3	2-4	2-3	3
$4_1 \# 6_3$	2-4	2-3	2-3	2-4	2-3	2-3	2-3	1-2	2-3	1-3	2-3	2-3
$5_1 \# 5_1$	4-6	3-6	6	2-3	3-5	2-4	5	4-5	3-5	5	4-6	2-3
$5_1^* \# 5_1^*$	4-6	5-6	2-3	6-7	5	6	3-4	4-5	5-7	3	4-6	6
$5_1 \# 5_1^*$	1-6	2-6	2-3	2-**3**	2-5	2-**4**	2-4	1-5	2-5	2-3	2-6	2-**3**
$5_1 \# 5_2$	3-5	2-5	5	2	2-4	2-3	4	3-4	2-4	4	3-5	2
$5_1^* \# 5_2^*$	3-5	4-5	2	5-6	4	5	2-3	3-4	4-6	2	3-5	5
$5_1 \# 5_2^*$	2-5	2-5	3-4	2	2-4	2-3	2-4	1-4	2-4	2-4	2-5	2
$5_1^* \# 5_2$	2-5	2-5	2	3-**4**	2-4	3-5	1-3	1-4	2-5	2	2-5	3-4
$5_2 \# 5_2$	2-4	2-4	4	2-**3**	2-3	2-4	3	2-3	2-4	3-4	2-4	2-3
$5_2^* \# 5_2^*$	2-4	3-4	2-3	4-5	3	4	2-3	2-3	3-5	2-3	2-4	4
$5_2 \# 5_2^*$	2-4	2-4	2-3	2-**3**	2-3	2-4	2-3	2-3	2-4	2-3	2-4	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_{15}	10_{16}	10_{17}	10_{18}	10_{19}	10_{20}	10_{21}	10_{22}	10_{23}	10_{24}	10_{25}
$3_1^* \# 7_2^*$	1-3	1-4	2-3	3	3-4	3-4	4	2-3	1-3	3-4	4
$3_1 \# 7_2^*$	2-3	2-4	1-3	2-3	2	1-2	2-3	1-4	2-3	1-3	2
$3_1^* \# 7_2$	2-3	2-4	1-3	2-3	2-4	1-4	2-3	1-3	2-3	1-3	2-**3**
$3_1 \# 7_3$	2-3	1-4	1-4	2-4	2-3	2-3	3-4	2-5	1-2	2-4	3
$3_1^* \# 7_3^*$	2-4	2-5	1-4	2-4	2-4	2-4	2	2-4	2-4	2-3	2-4
$3_1 \# 7_3^*$	4	4-5	3-4	2-4	2-3	2-3	2	3-5	4	2-3	2-3
$3_1^* \# 7_3$	2-3	2-4	3-4	4	4	4-5	5	3-4	2	4-5	5
$3_1 \# 7_4$	2-4	2-4	2-4	2-4	1-3	2-3	2-4	2-4	2-3	2-4	2-3
$3_1^* \# 7_4^*$	2-4	2-5	2-4	2-4	1-3	2-3	2-3	2-4	2-4	2-3	2-3
$3_1 \# 7_4^*$	3-4	3-5	2-4	2-4	1-3	2-3	1-3	2-5	3-4	2-3	2-3
$3_1^* \# 7_4$	2-4	2-4	2-4	3-4	3-4	3-5	4-5	2-4	2-3	3-5	4-5
$3_1 \# 7_5$	4	4-5	3-4	2-4	2-3	2-3	2-3	3-5	4	2-3	2
$3_1^* \# 7_5^*$	2-3	2-4	3-4	4	4	4-5	5	3-4	2-3	4-5	5
$3_1 \# 7_5^*$	1-3	1-4	2-4	2-4	2-3	2-3	3-4	1-4	1-3	2-4	3
$3_1^* \# 7_5$	2-4	2-5	2-4	1-4	1-3	2-3	2-3	1-4	2-4	2-3	2
$3_1 \# 7_6$	3	3-4	2-3	2-3	1-2	1-2	2-3	2-4	3	2-3	2
$3_1^* \# 7_6^*$	2-3	1-4	2-3	3	3	3-4	4	2-3	2-3	3-4	4
$3_1 \# 7_6^*$	1-3	2-4	1-3	2-3	1-2	2	2-3	1-4	1-3	1-3	2
$3_1^* \# 7_6$	1-3	2-4	1-3	2-3	1-3	2-3	2-3	1-3	1-3	1-3	2-3
$3_1 \# 7_7$	2-3	2-4	2-3	2-3	1-2	2	1-3	2-4	2-3	2-3	2
$3_1^* \# 7_7^*$	2-3	2-4	2-3	2-3	2-3	2-3	3-4	2-3	2-3	2-4	3
$3_1 \# 7_7^*$	2-3	2-4	2-3	2-3	1-2	2	1-3	2-4	2-3	2-3	2
$3_1^* \# 7_7$	2-3	2-4	2-3	2-3	2-3	2-4	3-4	2-3	2-3	2-4	3-4
$3_1 \# 3_1 \# 4_1$	3-4	3-4	2-4	1-3	1-3	1-3	1-4	2-4	3-4	1-4	2-3
$3_1^* \# 3_1^* \# 4_1$	1-4	1-4	2-4	3	3	3-5	4-5	2-4	1-4	3-5	4-5
$3_1 \# 3_1^* \# 4_1$	1-4	1-4	1-4	1-3	1-3	1-3	2-4	1-4	1-4	1-4	2-3
$4_1 \# 6_1$	2-4	2-3	1-3	1-2	2	1-3	2-3	1-3	1-3	1-3	2-3
$4_1 \# 6_1^*$	2-4	2	1-3	1-2	2	1-4	2-4	1-3	1-3	1-4	2-4
$4_1 \# 6_2$	2-4	2-3	2-3	1-2	2	1-3	1-3	1-3	2-3	1-3	1-3
$4_1 \# 6_2^*$	2-4	2-3	2-3	2	2	2-4	3-4	1-2	1-3	2-4	3-4
$4_1 \# 6_3$	2	1-3	2-3	2	2	2-3	2-4	2-3	2-3	2-4	2-3
$5_1 \# 5_1$	5	5-6	4	3-5	3-4	3-4	2-4	4-6	5	3-**4**	2-4
$5_1^* \# 5_1^*$	3	3-**5**	4	5	**5**	5-6	6	4-5	3-4	5-6	6
$5_1 \# 5_1^*$	2-3	2-**5**	2-4	1-5	2-4	1-4	2-**4**	2-5	2-4	1-**4**	2-4
$5_1 \# 5_2$	4	4-5	3	2-4	2-3	2-3	1-3	3-5	4	2-3	1-3
$5_1^* \# 5_2^*$	2	2-4	3	4	4	4-5	5	3-4	2-3	4-5	5
$5_1 \# 5_2^*$	2-4	2-4	2-3	1-4	2-3	1-3	1-3	2-5	2-3	1-**3**	1-3
$5_1^* \# 5_2$	2	2-**4**	2-3	2-4	2-4	2-4	3	2-4	1-3	2-3	3-4
$5_2 \# 5_2$	3	3-4	2-3	2-3	2-3	2-3	2	2-4	3	2	2-3
$5_2^* \# 5_2^*$	2-**3**	2-3	2-3	3	3	3-4	4	2-4	2	3-4	4
$5_2 \# 5_2^*$	2-3	2-3	2-3	2-3	2-3	2-3	2	1-4	2	2	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_{26}	10_{27}	10_{28}	10_{29}	10_{30}	10_{31}	10_{32}	10_{33}	10_{34}	10_{35}	10_{36}
$3_1^* \# 7_2^*$	2-3	1-2	2-3	3-4	3	2-3	2-3	2-3	2	2-4	3-4
$3_1 \# 7_2^*$	2-3	2-3	2-3	2-3	1-3	1-2	1-2	2-3	1-2	1-4	2
$3_1^* \# 7_2$	2-3	2	2-3	2-4	1-3	1-3	1-3	2-3	1-3	1-4	2
$3_1 \# 7_3$	2-4	1-4	2-3	2-4	2-4	1-3	2-3	1-4	2-3	2-5	2-3
$3_1^* \# 7_3^*$	2-4	2-3	2-4	2-5	1-3	1-4	2-4	1-4	2-4	2-5	2-3
$3_1 \# 7_3^*$	3-4	4	3-4	2-4	2-3	3	3	3-4	3	3-5	2-3
$3_1^* \# 7_3$	3-4	2-3	3	4-5	4	3	3-4	3-4	3	3-5	4-5
$3_1 \# 7_4$	2-4	2-3	2	2-4	2-4	2-3	1-3	2-4	2-3	2-5	1-3
$3_1^* \# 7_4^*$	2-4	2-3	2-4	2-4	2	2-3	1-3	2-4	2-3	2-5	1-3
$3_1 \# 7_4^*$	2-4	3-4	2-4	2-4	2	2-3	2-3	2-4	2-3	2-5	1-3
$3_1^* \# 7_4$	2-4	2-3	2	3-5	3-4	2-3	2-4	2-4	2-3	2-5	3-5
$3_1 \# 7_5$	3-4	4	3-4	2-4	2-3	3	3	3-4	3	3-5	2-3
$3_1^* \# 7_5^*$	3-4	2	3	4-5	4	3	3-4	3-4	3	3-5	4-5
$3_1 \# 7_5^*$	2-4	2	2-3	2-4	2-4	2-3	1-3	2-4	2-3	1-5	2-3
$3_1^* \# 7_5$	2-4	2-3	2-4	2-4	1-3	2-3	1-3	2-4	2-3	1-5	1-3
$3_1 \# 7_6$	2-3	3	2-3	2-3	1-3	2	2	2-3	2	2-3	1-2
$3_1^* \# 7_6^*$	2-3	2	2-3	3-4	3	2-3	2-3	2-3	2-3	2-3	3
$3_1 \# 7_6^*$	1-3	1-3	1-3	2-3	2-3	1-2	1-2	2-3	2	1-3	1-2
$3_1^* \# 7_6$	1-3	1-2	1-3	2-4	2-3	1-3	1-3	2-3	2-3	1-3	1-3
$3_1 \# 7_7$	2-3	2-3	2-3	1-3	2-3	1-2	1-2	2-3	2	2-3	1-2
$3_1^* \# 7_7^*$	2-3	2	2-3	2-4	2-3	1-3	1-3	2-3	2-3	2-3	2-3
$3_1 \# 7_7^*$	2-3	2-3	2-3	1-3	2-3	1-2	1-2	2-3	2	2-3	1-2
$3_1^* \# 7_7$	2-3	2	2-3	2-4	2-3	1-3	1-3	2-3	2-3	2-3	2-3
$3_1 \# 3_1 \# 4_1$	2-3	3-4	2-4	1-4	1-4	2-3	2-3	2-4	2-3	2-3	1-3
$3_1^* \# 3_1^* \# 4_1$	2-3	1-3	2-4	3-4	3-4	2-4	2-4	2-4	2-4	2-3	3
$3_1 \# 3_1^* \# 4_1$	1-3	1-3	2-4	1-4	1-4	1-3	1-3	2-4	2-3	1-3	1-3
$4_1 \# 6_1$	1-2	1-3	2-3	2	2-3	2-3	2-3	2	2-4	1-2	2
$4_1 \# 6_1^*$	1-2	1-3	2-3	2-3	2-3	2-3	2-3	2	2-4	1-2	2
$4_1 \# 6_2$	2	2-3	2-3	2	2	2-3	1-3	1-3	2-3	1-2	2
$4_1 \# 6_2^*$	2	1-2	2-3	2-3	2-3	2-3	1-2	1-3	2-4	1-2	2
$4_1 \# 6_3$	2	2-3	2	1-3	1-3	1-3	2	1-3	1-3	2	2
$5_1 \# 5_1$	4-5	5	4-5	3-5	3-**4**	4	4	4-5	4	4-6	3-4
$5_1^* \# 5_1^*$	4-5	3-4	**4**	5-6	5	**4**	4-5	4-5	**4**	4-6	5-6
$5_1 \# 5_1^*$	2-5	2-4	2-**4**	2-5	2-**4**	2-4	2-4	1-5	2-4	2-6	2-4
$5_1 \# 5_2$	3-4	4	3-4	2-4	2-3	3	3	3-4	3	3-5	2-3
$5_1^* \# 5_2^*$	3-4	2-3	3	4-5	4	3	3-4	3-4	3	3-5	4-5
$5_1 \# 5_2^*$	2-4	2-4	2-3	2-4	2-**3**	2-3	2-3	1-4	2-3	2-5	2-3
$5_1^* \# 5_2$	2-4	1-3	2-**3**	2-5	2-3	2-**3**	2-4	1-4	2-**3**	2-5	2-3
$5_2 \# 5_2$	2-3	3	2-4	1-4	2	2-3	2-3	2-3	2-3	2-4	2
$5_2^* \# 5_2^*$	2-3	2-3	2	3-4	3	2	2-3	2-3	2	2-4	3-4
$5_2 \# 5_2^*$	2-3	2-3	2	1-4	2	2	2-3	2-3	2	1-4	2

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	10_{37}	10_{38}	10_{39}	10_{40}	10_{41}	10_{42}	10_{43}	10_{44}	10_{45}	$3_1 \# 7_1$
$3_1^* \# 7_2^*$	2-3	3-4	4	1-2	3-4	2-3	2	3	2-3	6
$3_1 \# 7_2^*$	2-3	2-3	2-3	1-3	2-3	2-3	2	2	2-3	4
$3_1^* \# 7_2$	2-3	2-3	2-3	1-2	2-**3**	2-3	2	2-3	2-3	4
$3_1 \# 7_3$	2-3	2-4	3-4	2-3	2-4	2-4	2-3	2-3	1-4	5
$3_1^* \# 7_3^*$	2-3	1-3	2-3	2-3	1-4	2-4	2-3	2-4	1-4	**3**
$3_1 \# 7_3^*$	3	2-3	2-3	4	2-4	3-4	3	2-3	3-4	**1**
$3_1^* \# 7_3$	3	4-5	5	2-3	4-5	3-4	3	4	3-4	7
$3_1 \# 7_4$	2-3	2-4	2-4	2-3	2-4	1-4	2-3	2-3	2-4	4-5
$3_1^* \# 7_4^*$	2-3	2-3	2-3	2-3	2-4	1-4	2-3	2-3	2-4	**4**
$3_1 \# 7_4^*$	2-3	2-3	2-3	3-4	2-4	2-4	2-3	2-3	2-4	**2**
$3_1^* \# 7_4$	2-3	3-5	4-5	2-3	3-5	2-4	2-3	3-4	2-4	6-7
$3_1 \# 7_5$	3	2-3	2	4	2-4	3-4	3	2-3	3-4	**1**
$3_1^* \# 7_5^*$	3	4-5	5	2	4-5	3-4	3	4	3-4	7
$3_1 \# 7_5^*$	2-3	2-4	3-4	2	2-4	2-4	2-3	2-3	2-4	5
$3_1^* \# 7_5$	2-3	1-3	2	2-3	2-4	2-4	2-3	2-3	2-4	**3**
$3_1 \# 7_6$	2-3	2-3	2-3	3	2	2-3	2	1-2	2-3	2-3
$3_1^* \# 7_6^*$	2-3	3-4	4	1-2	3	2	2	3	2-3	6
$3_1 \# 7_6^*$	1-3	1-3	2-3	1-3	1-3	2	1-2	2	1-3	4
$3_1^* \# 7_6$	1-3	1-3	2-3	1-2	1-2	2-3	1-2	2	1-3	4-5
$3_1 \# 7_7$	2-3	2-3	2-3	2-3	2-3	1-3	2	2	2	3-4
$3_1^* \# 7_7^*$	2-3	2-4	3-4	1-2	2-3	1-3	2	2-3	2	5
$3_1 \# 7_7^*$	2-3	2-3	2-3	2-3	2-3	1-3	2	2	2	3
$3_1^* \# 7_7$	2-3	2-4	3-4	1-2	2-3	1-3	2	2	2	5-6
$3_1 \# 3_1 \# 4_1$	2-4	1-4	2-4	3-4	1-3	2-3	2-3	1-3	2-3	2-3
$3_1^* \# 3_1^* \# 4_1$	2-4	3-4	4	2-3	3	2-3	2-3	3	2-3	6-7
$3_1 \# 3_1^* \# 4_1$	2-4	1-4	2-4	2-3	1-3	1-3	2-3	1-3	1-3	4-5
$4_1 \# 6_1$	2-4	1-2	2-3	2-4	1-2	1-2	2-3	1-2	1-2	4-6
$4_1 \# 6_1^*$	2-4	1-3	2-3	2-4	1-2	1-2	2-3	1-2	1-2	4-6
$4_1 \# 6_2$	2-4	1-2	1-2	2-4	1-2	1-2	2-3	1-2	1-2	3-5
$4_1 \# 6_2^*$	2-4	2-3	3	2-3	2	1-2	2-3	2	1-2	5-6
$4_1 \# 6_3$	2-3	2-3	2-3	2	2	2	1-3	2	2	4-5
$5_1 \# 5_1$	**4**	3-**4**	2-4	5	3-5	4-5	4	3-4	4-5	2
$5_1^* \# 5_1^*$	**4**	5-6	6	3-4	5-6	4-5	4	5	4-5	8
$5_1 \# 5_1^*$	2-**4**	2-**4**	2-**4**	1-4	2-5	2-5	2-4	2-4	2-5	**4**
$5_1 \# 5_2$	3	2-3	1-3	4	2-4	3-4	3	2-3	3-4	1-3
$5_1^* \# 5_2^*$	3	4-5	5	2-3	4-5	3-4	3	4	3-4	7
$5_1 \# 5_2^*$	2-3	1-**3**	1-3	2-3	1-4	1-4	2-3	1-3	2-4	3
$5_1^* \# 5_2$	2-3	2-3	3	2-3	2-4	1-4	2-3	2-4	2-4	5
$5_2 \# 5_2$	2	2	2	3-4	2-3	2-3	2-3	2-3	2-4	2-**3**
$5_2^* \# 5_2^*$	2	3-4	4	2	3-4	2-3	2-3	3	2-4	6
$5_2 \# 5_2^*$	2	2	2	2	2-3	2-3	2-3	2-3	2-4	4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1^* \# 7_1$	$3_1 \# 7_2$	$3_1^* \# 7_2$	$3_1 \# 7_3$	$3_1^* \# 7_3$	$3_1 \# 7_4$	$3_1^* \# 7_4$
$3_1^* \# 7_2^*$	**4**	4	2	1-**3**	**1**	2-3	2
$3_1 \# 7_2^*$	2-4	2	1-4	**1**	**3**	2	2-4
$3_1^* \# 7_2$	**2**	2	0	1-4	3	2-3	2-3
$3_1 \# 7_3$	3-5	3	1-4	0	2	**1**	1-**3**
$3_1^* \# 7_3^*$	**1**	1-**3**	**1**	2-5	4	1-4	3-4
$3_1 \# 7_3^*$	1-**3**	**1**	**3**	4	6	3-4	5-6
$3_1^* \# 7_3$	**5**	5	3	2	0	**3**	**1**
$3_1 \# 7_4$	2-5	2-3	2-3	**1**	**3**	0	2
$3_1^* \# 7_4^*$	**2**	2-3	2	1-4	3-4	1-4	2-4
$3_1 \# 7_4^*$	1-**4**	2	2-4	3-4	5-6	2-4	4-6
$3_1^* \# 7_4$	4-**5**	4-5	2-3	1-**3**	**1**	2	0
$3_1 \# 7_5$	1-**3**	**1**	**3**	4	6	3-4	5-6
$3_1^* \# 7_5^*$	**5**	5	3	2-4	2	3-4	2
$3_1 \# 7_5^*$	3-5	3	1-3	2	2-4	2	2-4
$3_1^* \# 7_5$	**1**	1-3	**1**	2-4	4	2-4	3-4
$3_1 \# 7_6$	1-4	**1**	2-**3**	3	5	2-3	4-5
$3_1^* \# 7_6^*$	**4**	4	2	1-4	1-2	2-3	2
$3_1 \# 7_6^*$	2-4	2	1-3	1-2	3-4	2	2-4
$3_1^* \# 7_6$	2-**3**	2-3	**1**	1-4	3	2-3	2-3
$3_1 \# 7_7$	1-4	1-2	1-3	2-3	4	2	3-4
$3_1^* \# 7_7^*$	3-**4**	3	1-2	1-4	2-3	2-3	2-3
$3_1 \# 7_7^*$	1-4	1-2	1-4	2-3	4-5	2-3	3-5
$3_1^* \# 7_7$	3-**4**	3-4	1-2	1-4	2-3	2-3	2
$3_1 \# 3_1 \# 4_1$	1-5	1-3	2-5	3-4	5-6	2-4	4-6
$3_1^* \# 3_1^* \# 4_1$	4-**5**	4-5	2-3	1-5	1-3	2-4	1-2
$3_1 \# 3_1^* \# 4_1$	2-5	2-3	1-3	1-3	3-4	1-2	2-4
$4_1 \# 6_1$	2-6	2-4	2-4	2-5	3-5	1-5	2-5
$4_1 \# 6_1^*$	2-6	2-4	2-4	2-5	3-5	1-5	2-5
$4_1 \# 6_2$	1-5	2-3	2-4	2-4	4-5	2-4	3-5
$4_1 \# 6_2^*$	3-**5**	3-4	2-3	2-5	2-4	2-4	2-4
$4_1 \# 6_3$	2-5	2-3	1-3	2-4	3-4	2-4	2-4
$5_1 \# 5_1$	2-4	2-**3**	4-5	5	7	4-5	6-7
$5_1^* \# 5_1^*$	**6**	6	4	3-4	2	4-5	2-3
$5_1 \# 5_1^*$	2-**4**	2-4	2-4	2	3-4	2-3	2-5
$5_1 \# 5_2$	1-3	2	3-4	4	6	3-4	5-6
$5_1^* \# 5_2^*$	**5**	5	3	2-3	2	3-4	2
$5_1 \# 5_2^*$	1-3	2-3	2-4	2	4	2	3-4
$5_1^* \# 5_2$	**3**	3-4	2	2-3	2-3	2-4	2-4
$5_2 \# 5_2$	1-4	2	2-3	3-4	5	2-4	4-5
$5_2^* \# 5_2^*$	4-**5**	4	2-3	2-3	2	2-3	2
$5_2 \# 5_2^*$	2-4	2-3	2-3	2	3	2	2-3

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 7_5$	$3_1^* \# 7_5$	$3_1 \# 7_6$	$3_1^* \# 7_6$	$3_1 \# 7_7$	$3_1^* \# 7_7$	$3_1 \# 3_1 \# 4_1$
$3_1^* \# 7_2^*$	5	3	4	2	3	1-2	4-5
$3_1 \# 7_2^*$	3	1-3	2	1-3	1-2	1-4	2-3
$3_1^* \# 7_2$	**3**	**1**	2-**3**	**1**	1-3	1-2	2-5
$3_1 \# 7_3$	4	2-4	3	1-4	2-3	1-4	3-4
$3_1^* \# 7_3^*$	2-4	2	1-4	1-2	1-4	2-3	1-5
$3_1 \# 7_3^*$	2	2-4	1-2	3-4	2-3	4-5	1-3
$3_1^* \# 7_3$	6	4	5	3	4	2-3	5-6
$3_1 \# 7_4$	3-4	2-4	2-3	2-3	2	2-3	2-4
$3_1^* \# 7_4^*$	3-4	2	2-3	2	2-3	2-3	2-4
$3_1 \# 7_4^*$	2	2-4	2	2-4	2-3	3-5	1-2
$3_1^* \# 7_4$	5-6	3-4	4-5	2-3	3-4	2	4-6
$3_1 \# 7_5$	0	2	2	3-4	2-3	4-5	2
$3_1^* \# 7_5^*$	6	4	5	3	4	2	5-6
$3_1 \# 7_5^*$	4	2-4	3	2-3	2	2-3	3-4
$3_1^* \# 7_5$	2	0	2-3	2	2-3	2-3	2-4
$3_1 \# 7_6$	2	2-3	0	2	1-2	3-4	1-2
$3_1^* \# 7_6^*$	5	3	4	2	3	1-2	4
$3_1 \# 7_6^*$	3	2-3	2	1-3	1-2	1-3	2
$3_1^* \# 7_6$	3-4	2	2	0	1-3	1-2	2-4
$3_1 \# 7_7$	2-3	2-3	1-2	1-3	0	2	1-2
$3_1^* \# 7_7^*$	4	2-3	3	1-2	2-3	1-2	3-4
$3_1 \# 7_7^*$	2	2-3	1-2	1-3	1-2	2-4	1-2
$3_1^* \# 7_7$	4-5	2-3	3-4	1-2	2	0	3-4
$3_1 \# 3_1 \# 4_1$	2	2-4	1-2	2-4	1-2	3-4	0
$3_1^* \# 3_1^* \# 4_1$	5-6	3-4	4	2	3-4	1-2	4
$3_1 \# 3_1^* \# 4_1$	3-4	2-4	2	1-2	1-2	1-2	2
$4_1 \# 6_1$	3-5	2-5	2-3	2-3	2-3	2-3	2-3
$4_1 \# 6_1^*$	3-5	2-5	2-3	2-3	2-3	2-3	2-3
$4_1 \# 6_2$	2-4	1-4	2-3	2-3	2-3	2-3	1-3
$4_1 \# 6_2^*$	4-5	2-4	3	2-3	2-3	2-3	3
$4_1 \# 6_3$	3-4	2-4	2-3	1-3	2-3	2-3	2-3
$5_1 \# 5_1$	2	3-4	2-3	4-5	3-4	5-6	2-3
$5_1^* \# 5_1^*$	7	5	6	4	5	3	6-7
$5_1 \# 5_1^*$	3-**4**	2-**4**	2-4	2-4	2-3	2-4	2-5
$5_1 \# 5_2$	1-2	2-3	2	3-4	2-3	4-5	1-3
$5_1^* \# 5_2^*$	6	4	5	3	4	2-3	5-6
$5_1 \# 5_2^*$	2-3	1-3	2-3	2-4	2-3	2-4	1-4
$5_1^* \# 5_2$	4	2	3-4	2	2-4	2-3	3-5
$5_2 \# 5_2$	2	2-3	2	2-3	2-3	3-4	2-3
$5_2^* \# 5_2^*$	5	3-4	4	2-3	3-4	2-3	4-5
$5_2 \# 5_2^*$	3	2-3	2-3	2-3	2-3	2-3	2-4

Table 7.7 Strand Passage Metric on Unoriented DNA Knots: d_2 (cont.)

	$3_1 \# 3_1^* \# 4_1$	$4_1 \# 6_1$	$4_1 \# 6_2$	$4_1 \# 6_3$	$5_1 \# 5_1$	$5_1 \# 5_1^*$	$5_1 \# 5_2$
$3_1^* \# 7_2^*$	2-3	2-4	3-4	2-3	6	2-4	5
$3_1 \# 7_2^*$	1-3	2-4	2-3	1-3	4	2-**3**	3
$3_1^* \# 7_2$	1-3	2-4	2-4	1-3	4-5	2-4	3-4
$3_1 \# 7_3$	1-3	2-5	2-4	2-4	5	2	4
$3_1^* \# 7_3^*$	1-4	2-5	2-5	2-4	3-4	2-**4**	2-3
$3_1 \# 7_3^*$	3-4	3-5	2-4	3-4	2	3-**4**	2
$3_1^* \# 7_3$	3-4	3-5	4-5	3-4	7	3-4	6
$3_1 \# 7_4$	1-2	1-5	2-4	2-4	4-5	2-3	3-4
$3_1^* \# 7_4^*$	1-4	1-5	2-4	2-4	4-5	2-5	3-4
$3_1 \# 7_4^*$	2-4	2-5	2-4	2-4	2-3	2-5	2
$3_1^* \# 7_4$	2-4	2-5	3-5	2-4	6-7	2-5	5-6
$3_1 \# 7_5$	3-4	3-5	2-4	3-4	2	3-**4**	1-2
$3_1^* \# 7_5^*$	3-4	3-5	4-5	3-4	7	3-4	6
$3_1 \# 7_5^*$	2	2-5	2-4	2-4	5	2	4
$3_1^* \# 7_5$	2-4	2-5	1-4	2-4	3-4	2-**4**	2-3
$3_1 \# 7_6$	2	2-3	2-3	2-3	2-3	2-4	2
$3_1^* \# 7_6^*$	2	2-3	3	2-3	6	2-4	5
$3_1 \# 7_6^*$	1-2	2-3	2-3	1-3	4	2-3	3
$3_1^* \# 7_6$	1-2	2-3	2-3	1-3	4-5	2-4	3-4
$3_1 \# 7_7$	1-2	2-3	2-3	2-3	3-4	2-3	2-3
$3_1^* \# 7_7^*$	1-2	2-3	2-3	2-3	5	2-4	4
$3_1 \# 7_7^*$	1-2	2-3	2-3	2-3	3	2-4	2-3
$3_1^* \# 7_7$	1-2	2-3	2-3	2-3	5-6	2-4	4-5
$3_1 \# 3_1 \# 4_1$	2	2-3	1-3	2-3	2-3	2-5	1-3
$3_1^* \# 3_1^* \# 4_1$	2	2-3	3	2-3	6-7	2-5	5-6
$3_1 \# 3_1^* \# 4_1$	0	1-3	1-3	1-3	4-5	1-3	3-4
$4_1 \# 6_1$	1-3	0	**1**	1-2	4-6	1-6	3-5
$4_1 \# 6_1^*$	1-3	**1**	1-2	1-2	4-6	1-6	3-5
$4_1 \# 6_2$	1-3	**1**	0	2	3-5	1-5	2-4
$4_1 \# 6_2^*$	1-3	1-2	2	2	5-6	1-5	4-5
$4_1 \# 6_3$	1-3	1-2	2	0	4-5	2-5	3-4
$5_1 \# 5_1$	4-5	4-6	3-5	4-5	0	**4**	**1**
$5_1^* \# 5_1^*$	4-5	4-6	5-6	4-5	8	4	7
$5_1 \# 5_1^*$	1-3	1-6	1-5	2-5	**4**	0	**3**
$5_1 \# 5_2$	3-4	3-5	2-4	3-4	**1**	**3**	0
$5_1^* \# 5_2^*$	3-4	3-5	4-5	3-4	7	3	6
$5_1 \# 5_2^*$	1-3	1-5	1-4	2-4	3	**1**	2
$5_1^* \# 5_2$	1-4	1-5	2-5	2-4	**5**	1-3	4
$5_2 \# 5_2$	2-4	2-4	2-4	2-4	**2**	2-**4**	**1**
$5_2^* \# 5_2^*$	2-4	2-4	3-4	2-4	6	2-**4**	5
$5_2 \# 5_2^*$	2-3	2-4	2-4	2-4	**4**	**2**	3