

1.) Find the area between the curve  $f(x) = \begin{cases} 2 & x < 0 \\ -3 & x > 0 \end{cases}$ , and the x-axis, and between  $x = -4$  and  $x = 5$ .

2a.)  $\int_{-4}^5 |f(x)| dx =$

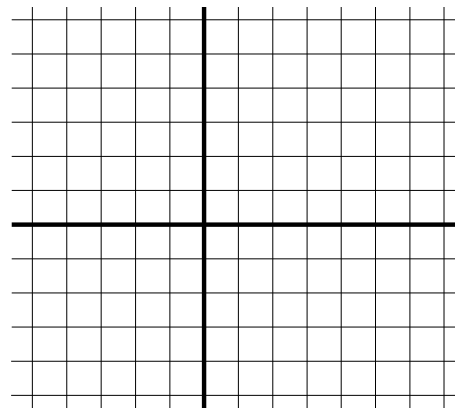
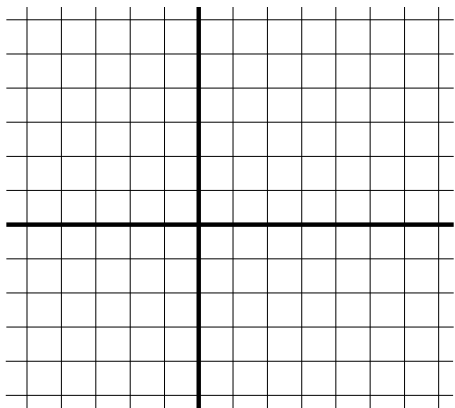
2b.)  $\int_{-4}^5 f(x) dx =$

3.) The speed of a runner decreased steadily after crossing the finish line. Her speed at 2 second intervals is given in the table. Find lower and upper estimates for the distance that she traveled during these 6 seconds.

$t(\text{seconds})$	0	2	4	6
$v(\text{feet/sec})$	40	20	5	0

Lower estimate: \_\_\_\_\_,

Upper estimate: \_\_\_\_\_



FYI: Side Note:

A.) Find the area under the curve  $f(x) = 2$ , above the x-axis, and between  $x = 0$  and  $x = 5$ .

B.) Find the area under the curve  $h(x) = \begin{cases} 2 & x \neq 1, 2, 3, 4 \\ 0 & x = 1, 2, 3, 4 \end{cases}$ , above the x-axis, and between  $x = 0$  and  $x = 5$ .

C.) Find the area under the curve  $h(x) = \begin{cases} 2 & x \text{ irrational} \\ 0 & x \text{ rational} \end{cases}$ , above the x-axis, and between  $x = 0$  and  $x = 5$ .

D.) Find the area under the curve  $h(x) = \begin{cases} 2 & x \text{ rational} \\ 0 & x \text{ irrational} \end{cases}$ , above the x-axis, and between  $x = 0$  and  $x = 5$ .

$\frac{1}{1}, \frac{1}{2}, \frac{2}{1}, \frac{1}{3}, \frac{3}{1}, \frac{1}{4}, \frac{2}{3}, \frac{3}{2}, \frac{4}{1}, \dots$