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 \( x = 5 \).

\[ \frac{1}{1}, \frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{2}{1}, \frac{2}{3}, \frac{3}{2}, \frac{4}{1}, \ldots \]
Real notes:

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.

<table>
<thead>
<tr>
<th>$t$(seconds)</th>
<th>0</th>
<th>2</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>$v$(feet/sec)</td>
<td>40</td>
<td>20</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>

Lower estimate: ___________. Upper estimate: ___________