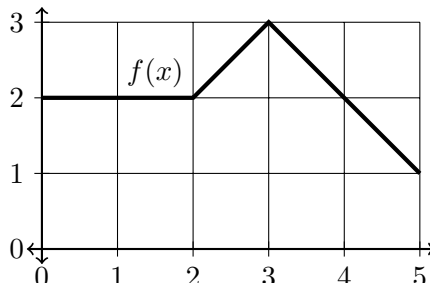


"Area So Far" functions

1. Let $f(x)$ be given by the graph below and define $A(x) = \int_0^x f(t) dt$.



Compute the following using the graph. Hint: $A(1) = \int_0^1 f(x) dx$, which calculates the area accumulated under the graph from $x = 0$ to $x = 1$.

$A(1) =$ _____	$f(1) =$ _____
$A(2) =$ _____	$f(2) =$ _____
$A(3) =$ _____	$f(3) =$ _____
$A(4) =$ _____	$f(4) =$ _____
$A(5) =$ _____	$f(5) =$ _____

The x -value in the interval $[0, 5]$ at which $A(x)$ attains its maximum is _____

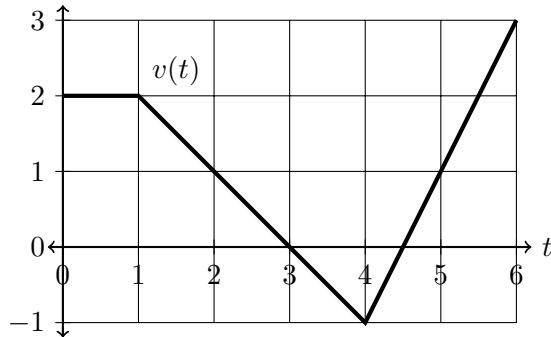
The maximum value of $A(x)$ on $[0, 5]$ is _____

The x -value in the interval $[0, 5]$ at which $f(x)$ attains its maximum is _____

The maximum value of $f(x)$ on $[0, 5]$ is _____

What can you say about the **rate of change** of $A(x)$?

2. A toy car is travelling on a straight track. Its velocity $v(t)$, in meters per second, is given by the graph below. Define $s(t)$ to be the position of the car in meters, and suppose that $s(0) = 0$. Note that $s(t) = \int_0^t v(x) dx$. (Here, x is called the “dummy variable of integration”.)



Compute the following:

$$s(2) = \underline{\hspace{2cm}} \quad s(4) = \underline{\hspace{2cm}} \quad s(6) = \underline{\hspace{2cm}}$$

$$v(2) = \underline{\hspace{2cm}} \quad v(4) = \underline{\hspace{2cm}} \quad v(6) = \underline{\hspace{2cm}}$$

The t -value in the interval $[0, 6]$ at which $s(t)$ attains its maximum is $\underline{\hspace{2cm}}$

The maximum value of $s(t)$ on $[0, 6]$ is $\underline{\hspace{2cm}}$

The t -value in the interval $[0, 6]$ at which $s(t)$ attains its minimum is $\underline{\hspace{2cm}}$

The minimum value of $s(t)$ on $[0, 6]$ is $\underline{\hspace{2cm}}$

The t -value in the interval $[0, 6]$ at which $v(t)$ attains its maximum is $\underline{\hspace{2cm}}$

The maximum value of $v(t)$ on $[0, 6]$ is $\underline{\hspace{2cm}}$

The t -value in the interval $[0, 6]$ at which $v(t)$ attains its minimum is $\underline{\hspace{2cm}}$

The minimum value of $v(t)$ on $[0, 6]$ is $\underline{\hspace{2cm}}$

Describe the position of the car over the 6 seconds. $\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

Describe the velocity of the car over the 6 seconds. $\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$

$\underline{\hspace{2cm}}$