

Section 3.1 Derivatives, average velocity, instantaneous velocity

Difference Quotient

Tangent Line

Derivative

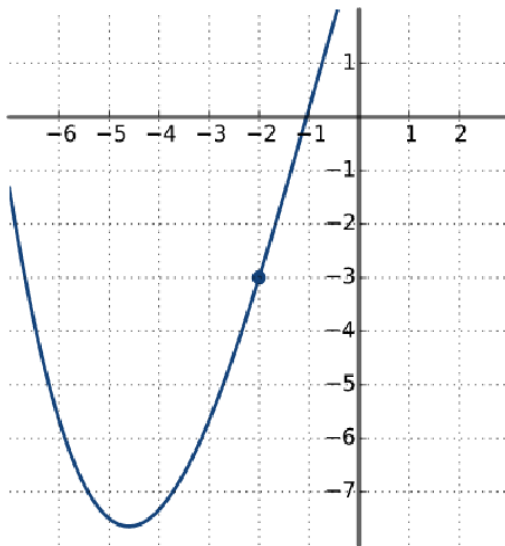
$$f(x) = 3x^2 - x + 2, a = 1$$

$$g(x) = \frac{1}{x-3}, a = -1$$

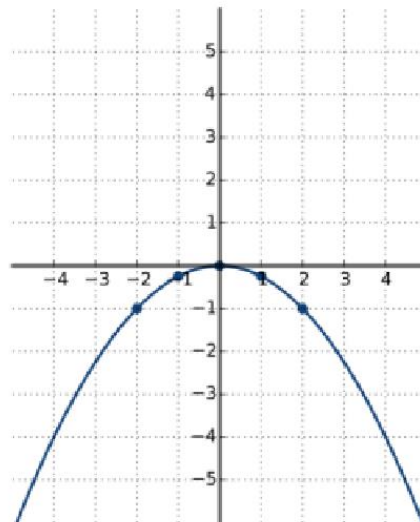
$$h(x) = \sqrt{x-9}, a = 13$$

$$s = 14t^2$$

Given the graph of the function $f(x)$ below, estimate the slope of the tangent line to the curve at $x = -2$. Select the answer that is closest.

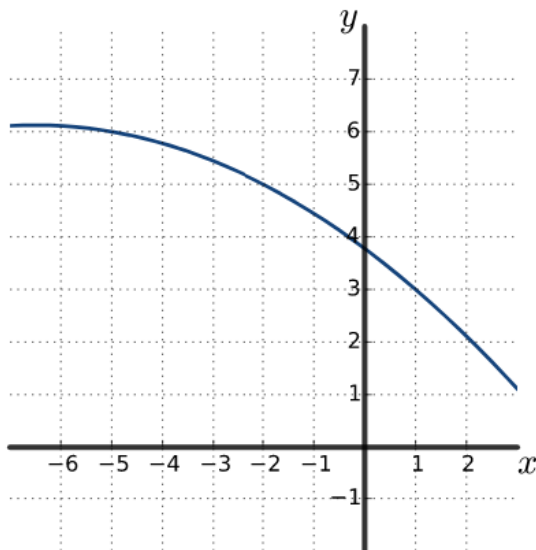


The graph of function $f(x)$ is shown below. At which value of x is the slope of the tangent line to the curve equal to $\frac{1}{2}$?

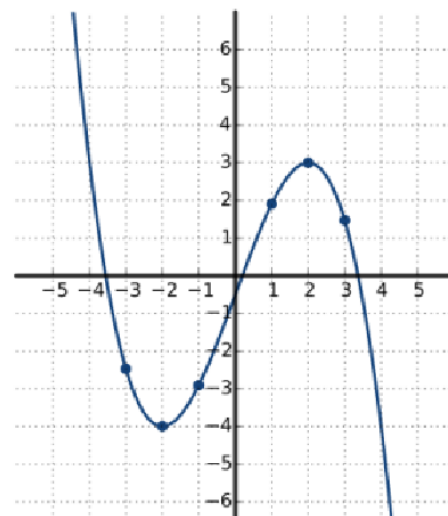


Given the graph of $f(x)$ below. Determine the average rate of change of $f(x)$ from $x = -5$ to $x = 1$.

Give your answer as a simplified fraction if necessary. For example, if you found that $m_{\text{sec}} = \frac{2}{3}$, you would enter $\frac{2}{3}$.



Find the x values where the slope of the function shown below is zero. Select all correct answers.



A ball is shot from a slingshot at a velocity of 15m/s . The height of the ball after t seconds is given by $h(t) = 10 + 5t + \frac{1}{4}t^2$. Predict the instantaneous velocity after 8 seconds. Your answer should be a whole number