Example

The cost (in dollars) of producing x Alpha air purifiers is

$$C(x) = -\frac{1}{10}x^2 + 5x + 1000.$$

(a) Find the rate of change of cost with respect to the number of units manufactured.

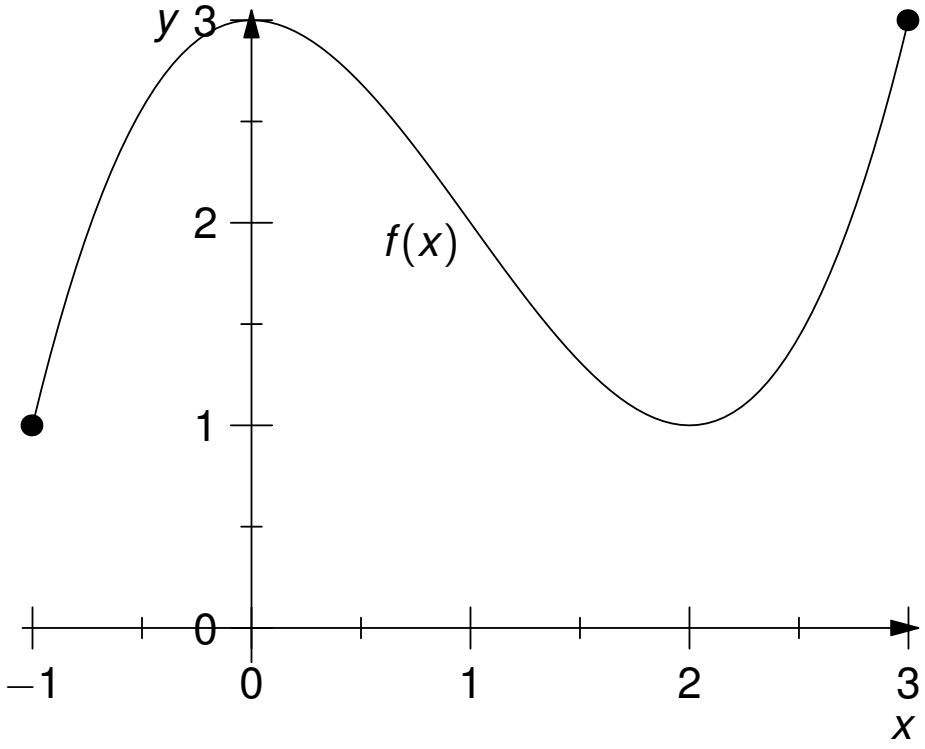
(b) What is the marginal cost for producing 100 Alpha air purifiers? What is the fixed cost?

Example

Using the definition of the derivative, find the equation of the tangent line to the graph of $f(x) = \dfrac{2}{x-1}$ at $x = 2$.

Example

In this graph, find the intervals or points on the x-axis where $f'(x)$ is (a) positive, (b) negative, (c) zero, and (d) does not exist.



Example

Bravo biscuts has a new advertising campain, which is going to cost x thousands of dollars. The profit (in dollars) from the new advertising campain is going to be

$$P(x) = 1000 + 32 - 2x^2.$$

Your job is to figure out how much to spend on the ad campain.

Find the marginal profit when Bravo biscuts spends

(a) \$5000 (b) \$10000.

What does the marginal profit tell you about how much to spend?