

Exercise 28

For the following exercises, use the graph in Figure 1 showing the profit, y , in thousands of dollars, of a company in a given year, x , where x represents years since 1980.

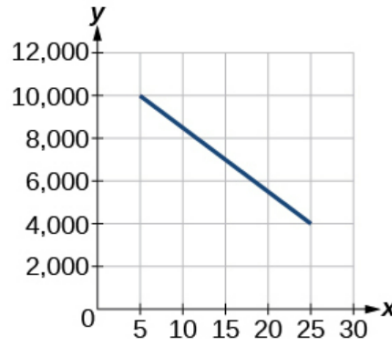


Figure 1

Find and interpret the y -intercept.

Solution

To get the linear function, two points on this graph need to be identified: $(5, 10\,000)$ and $(25, 4\,000)$. Determine the slope first.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4\,000 - 10\,000}{25 - 5} = \frac{-6\,000}{20} = -300$$

Then use the point-slope formula with either of the two points to get the equation of the line.

$$y - 10\,000 = -300(x - 5)$$

$$y - 10\,000 = -300x + 1\,500$$

$$y = -300x + 11\,500$$

To get the y -intercept, set $x = 0$.

$$y = -300(0) + 11\,500 = 11\,500$$

Therefore, the y -intercept is $(0, 11\,500)$. This indicates that the company had a profit of \$11,500,000 in 1980.