

Exercise 24

For the following exercises, use the graph in Figure 3, showing the profit, y , in thousands of dollars, of a company in a given year, x , where x represents years since 1980.

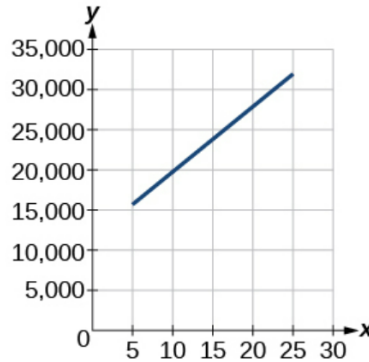
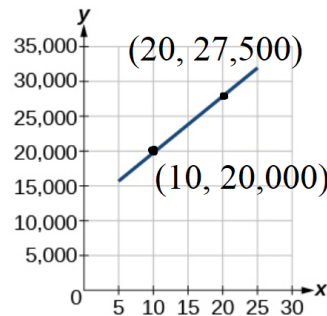


Figure 3

Find and interpret the y -intercept.

Solution

Two points on this line are needed to write the equation for it.



Use them to determine the slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{27\,500 - 20\,000}{20 - 10} = \frac{7\,500}{10} = 750$$

Use the point-slope formula with either of the points to get the equation of the line.

$$y - 20\,000 = 750(x - 10)$$

$$y - 20\,000 = 750x - 7\,500$$

$$y = 750x + 12\,500$$

The y -intercept is found by setting $x = 0$.

$$y = 750(0) + 12\,500 = 12\,500$$

Therefore, the y -intercept is $(0, 12\,500)$. This indicates that the company's profit in 1980 was \$12,500,000.