## Exercise 23

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.

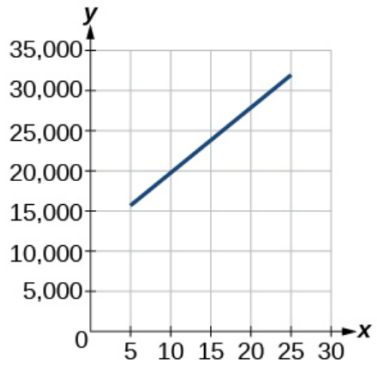


Figure 3

Find the linear function $y$, where $y$ depends on $x$, the number of years since 1980.

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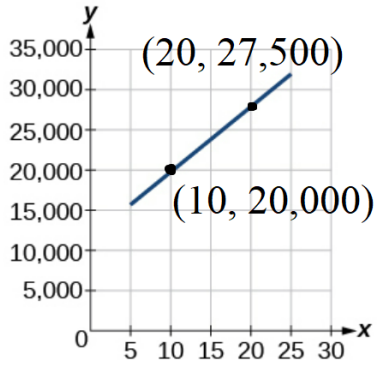
**Solution**

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




Use them to determine the slope.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{27\,500 - 20\,000}{20 - 10} = \frac{7500}{10} = 750$$

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

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

$$y - 20\,000 = 750x - 7500$$

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