

Exercise 35

For the following exercises, use the graph in Figure 8, which shows the profit, y , in thousands of dollars, of a company in a given year, t , where t represents the number of years since 1980.

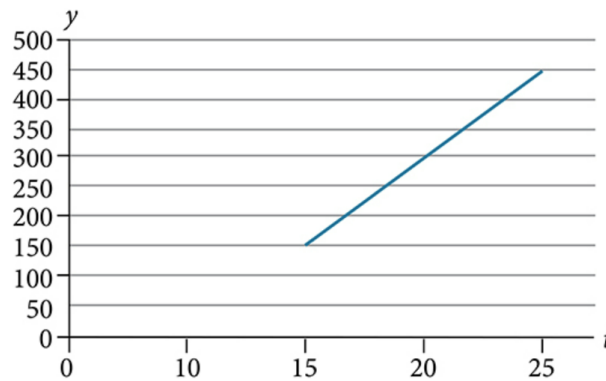


Figure 8

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

Solution

To write an equation for this line, two points on it are needed. Notice that when $t = 15$, $y = 150$, and when $t = 25$, $y = 450$: $(15, 150)$ and $(25, 450)$. Determine the slope first.

$$m = \frac{y_2 - y_1}{t_2 - t_1} = \frac{450 - 150}{25 - 15} = \frac{300}{10} = 30$$

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

$$y - 150 = 30(t - 15)$$

$$y - 150 = 30t - 450$$

$$y = 30t - 300$$