

Exercise 32

For the following exercises, use the graph in Figure 7, 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.

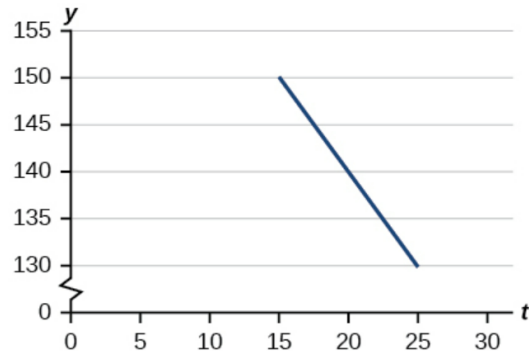


Figure 7

Find and interpret the y -intercept.

Solution

To write an equation for this line, two points on it are needed. Notice that when $t = 15$, $y = 150$, and when $t = 25$, $y = 130$: $(15, 150)$ and $(25, 130)$. Determine the slope first.

$$m = \frac{y_2 - y_1}{t_2 - t_1} = \frac{130 - 150}{25 - 15} = \frac{-20}{10} = -2$$

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

$$y - 130 = -2(t - 25)$$

$$y - 130 = -2t + 50$$

$$y = -2t + 180$$

To find the y -intercept, set $t = 0$.

$$y = -2(0) + 180 = 180$$

Therefore, the y -intercept is $(0, 180)$. This means the company had a profit of \$180,000 in 1980.