

Exercise 35

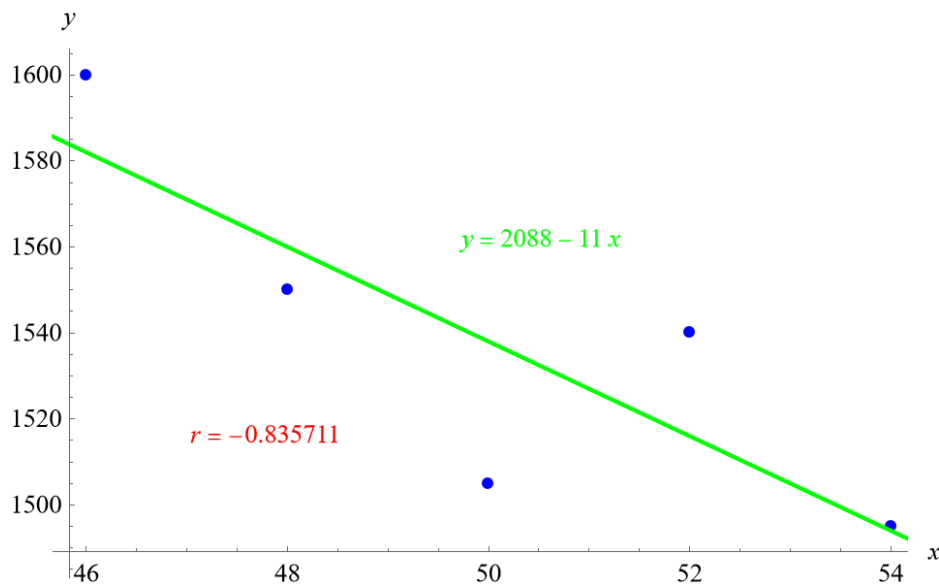
For the following exercises, consider this scenario: The profit of a company decreased steadily over a ten-year span. The following ordered pairs shows dollars and the number of units sold in hundreds and the profit in thousands of over the ten-year span, (number of units sold, profit) for specific recorded years:

$$(46, 1,600), (48, 1,550), (50, 1,505), (52, 1,540), (54, 1,495).$$

Find to the nearest tenth and interpret the x -intercept.

Solution

Plot the following points on a graph: $(46, 1600)$, $(48, 1550)$, $(50, 1505)$, $(52, 1540)$, and $(54, 1495)$.



Mathematica's FindFit function gives

$$y = 2088 - 11x,$$

and Mathematica's Correlation function gives $r = -0.835711$. Determine the x -intercept by setting $y = 0$ and solving the equation for x .

$$0 = 2088 - 11x$$

$$11x = 2088$$

$$x = \frac{2088}{11} \approx 189.8$$

Therefore, the x -intercept is about $(189.8, 0)$, and it means the company will have zero profit if about 18,980 units are sold.