Exercise 39

For the following exercises, consider this scenario: The profit of a company increased steadily over a ten-year span. The following ordered pairs show 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:
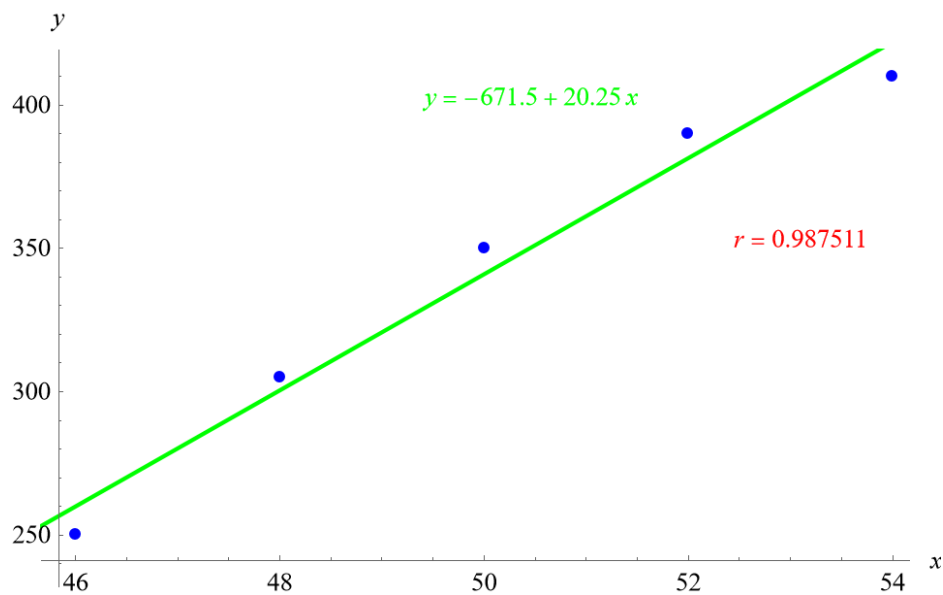
$$(46, 250), (48, 305), (50, 350), (52, 390), (54, 410).$$

Use linear regression to determine a function y, where the profit in thousands of dollars depends on the number of units sold in hundreds.

Solution

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

Mathematica's FindFit function gives

$$y = -671.5 + 20.25x,$$

and Mathematica's Correlation function gives $r = 0.987111$.