# Exercise 43

For the following exercises, consider this scenario: The population of a city increased steadily over a ten-year span. The following ordered pairs show the population and the year over the ten-year span (population, year) for specific recorded years:

$$(3{,}600, 2000); (4{,}000, 2001); (4{,}700, 2003); (6{,}000, 2006)$$

Predict when the population will hit 12,000.

Solution

Plot the following points: $(3600, 2000)$, $(4000, 2001)$, $(4700, 2003)$, and $(6000, 2006)$.
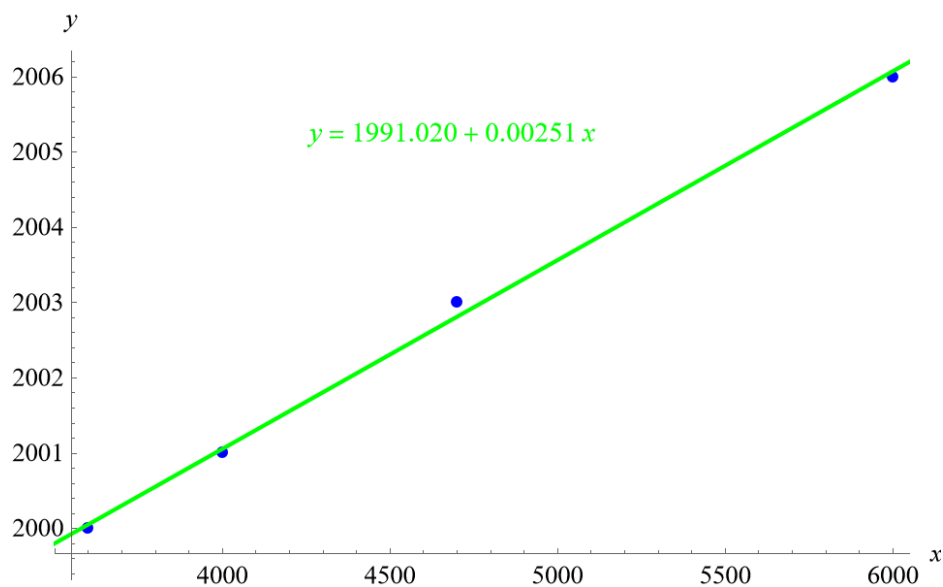
Mathematica's FindFit function gives

$$y = 1991.020 + 0.00251x$$

for the line of best fit. To determine when the population hits 12,000, plug in $x = 12\,000$.

$$y = 1991.020 + 0.00251(12\,000) \approx 2021.14$$

The population reaches 12,000 shortly after the start of 2021.

This answer is in disagreement with the one at the back of the book.