

Exercise 74

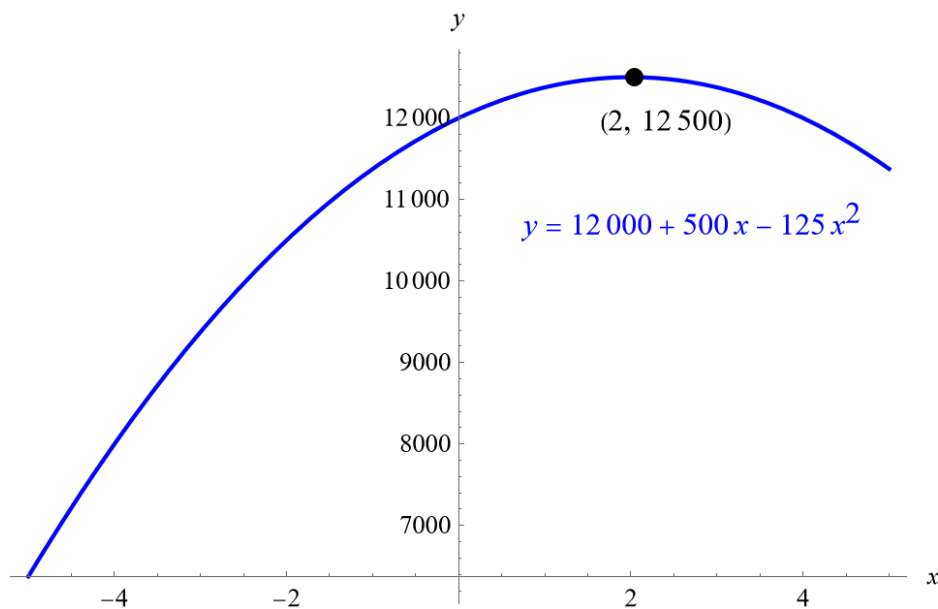
Three hundred books sell for \$40 each, resulting in a revenue of $(300)(\$40) = \$12,000$. For each \$5 increase in the price, 25 fewer books are sold. Write the revenue R as a function of the number x of \$5 increases.

Solution

The revenue is the product of the number of books sold and the price.

$$\begin{aligned} R(x) &= N(x)P(x) \\ &= (300 - 25x)(40 + 5x) \\ &= 12\,000 + 500x - 125x^2 \end{aligned}$$

Below is a graph of the revenue function versus x .



The revenue is maximum when $x = 2$, or when the book is sold for \$50 each.