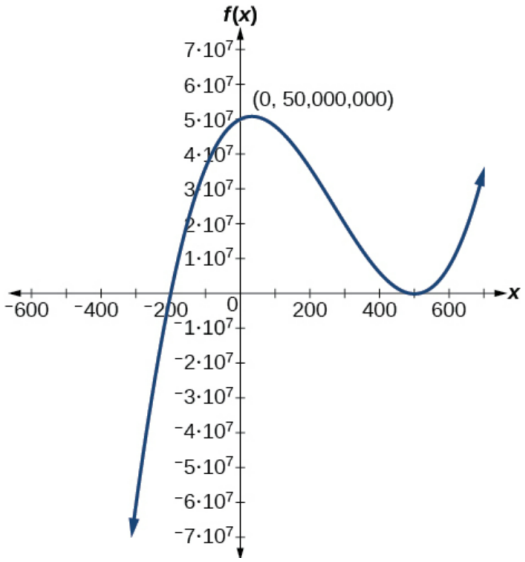
Exercise 73

For the following exercises, use the graphs to write a polynomial function of least degree.



Solution

Use the labelled x-intercepts to write the model polynomial function.

$$f(x) = A(x + 200)(x - 500)^2$$

The factor $(x - 500)$ is squared because the graph bounces back after hitting the x-axis. Use the labelled y-intercept to determine A.

$$50\,000\,000 = A(0 + 200)(0 - 500)^2 \quad \rightarrow \quad 50\,000\,000 = A(50\,000\,000) \quad \rightarrow \quad A = 1$$

Therefore,

$$f(x) = (x + 200)(x - 500)^2.$$