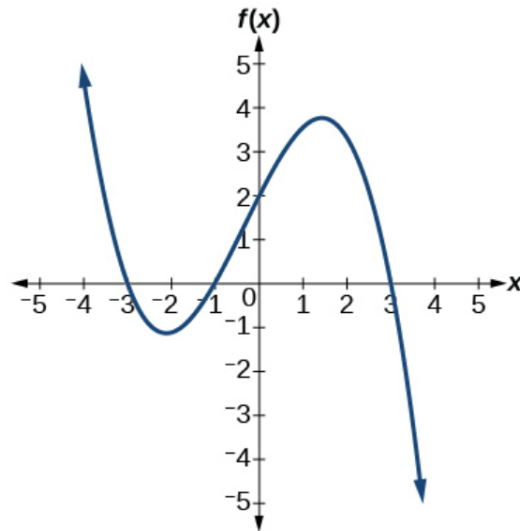


Exercise 49

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



Solution

Notice where the graph crosses the x -axis: The zeros are $x = -3$, $x = -1$, and $x = 3$. The model equation of the polynomial function is

$$f(x) = A(x + 3)(x + 1)(x - 3).$$

To determine A , use a known point on the graph, for example, the y -intercept $(0, 2)$.

$$2 = A(0 + 3)(0 + 1)(0 - 3) \quad \rightarrow \quad 2 = A(-9) \quad \rightarrow \quad A = -\frac{2}{9}$$

Therefore,

$$f(x) = -\frac{2}{9}(x + 3)(x + 1)(x - 3).$$