

## Exercise 62

The  $y$ -intercept is  $(0, 9)$ . The  $x$ -intercepts are  $(-3, 0)$ ,  $(3, 0)$ . Degree is 2. End behavior: as  $x \rightarrow -\infty$ ,  $f(x) \rightarrow -\infty$ , as  $x \rightarrow \infty$ ,  $f(x) \rightarrow -\infty$ .

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### Solution

The  $x$ -intercepts reveal the structure of the function.

$$\begin{aligned} f(x) &= -(x + 3)(x - 3) \\ &= -(x^2 - 9) \\ &= -x^2 + 9 \end{aligned}$$

The function is graphed below, and the intercepts are labelled.

