Exercise 1

Explain the advantage of writing a quadratic function in standard form.

Solution

A general quadratic function is written as $y = ax^2 + bx + c.$ If it's written in standard form,

$$y = a(x - h)^2 + k,$$

you can graph it easily. The parent function is x^2; multiplying it by a vertically stretches it by a factor of a.

$$ax^2$$

Replacing x with $x - h$ shifts the graph to the right by h units.

$$a(x - h)^2$$

Adding k to this shifts the graph up by k units.

$$a(x - h)^2 + k$$