Finding the vertex of a parabola

A quadratic function has the form

$$f(x) = ax^2 + bx + c$$

Its graph is a parabola. The vertex is the turning point. Its x-coordinate is

$$x = -b / (2a)$$

Example

Find the vertex of

$$f(x) = x^2 - 4x + 3$$

Here a = 1 and b = −4, so

$$x = -(-4) / (2 \cdot 1) = 2$$

Then

$$f(2) = 2^2 - 4 \cdot 2 + 3 = -1$$

The vertex is (2, −1).

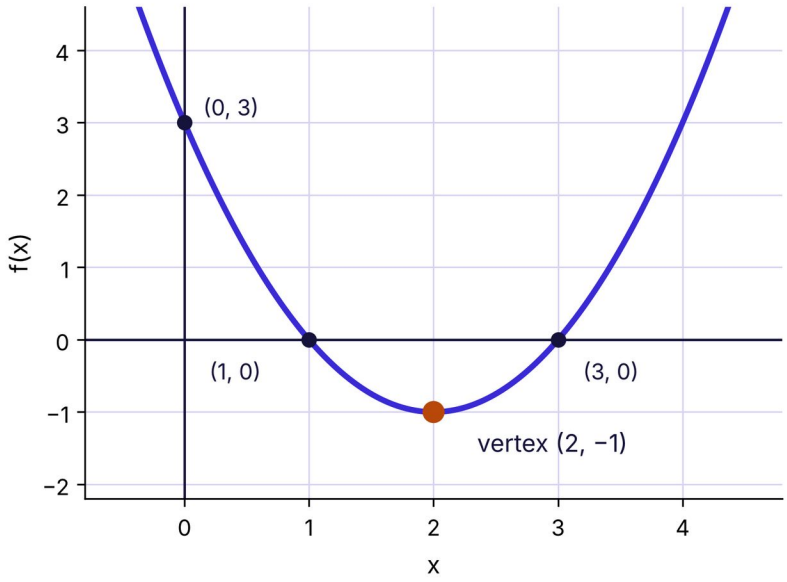


Figure 1. The vertex is the lowest point of this parabola.

Values of f(x)

x	f(x)
0	3
1	0
2	−1
3	0
4	3

Lesson written by Proof & Plain as a sample, November 2026. Each equation in this file is real text with a spoken-math description for screen readers.