

LARSON ALGEBRA 1**CHAPTER 9, LESSON 4, EXTRA EXAMPLE****Extra Example 2 Solving an Equation Graphically**

Solve the equation $2x - x^2 = -3$ graphically. Check the solution algebraically.

SOLUTION

1. Write the equation in the form $ax^2 + bx + c = 0$.

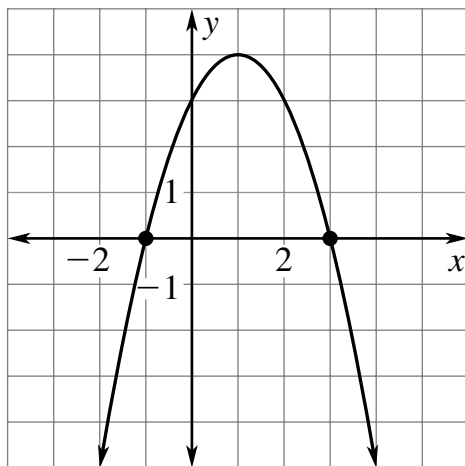
$$2x - x^2 = -3 \quad \text{Write original equation.}$$

$$-x^2 + 2x + 3 = 0 \quad \text{Add 3 to each side.}$$

2. Write the related function $y = ax^2 + bx + c$.

$$y = -x^2 + 2x + 3$$

3. Sketch the graph of the function $y = -x^2 + 2x + 3$.



From the graph, the x -intercepts appear to be $x = -1$ and $x = 3$.

✓ CHECK You can check this by substitution..

Check $x = -1$

$$2x - x^2 = -3$$

$$2(-1) - (-1)^2 \stackrel{?}{=} -3$$

$$-2 - 1 \stackrel{?}{=} -3$$

$$-3 = -3$$

Check $x = 3$

$$2x - x^2 = -3$$

$$2(3) - 3^2 \stackrel{?}{=} -3$$

$$6 - 9 \stackrel{?}{=} -3$$

$$-3 = -3$$