

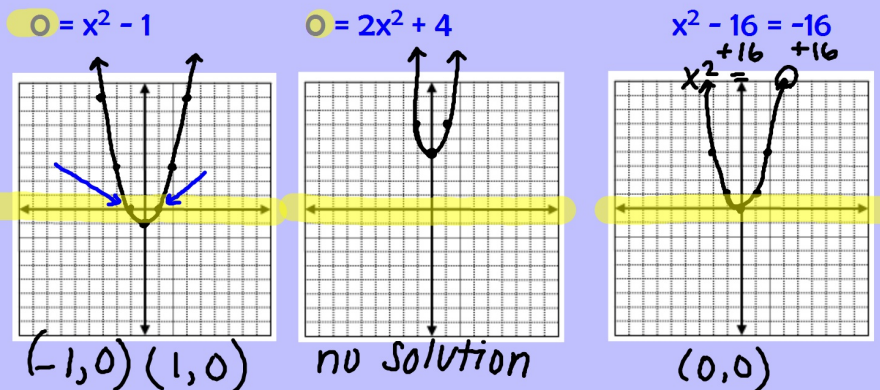
10.4 Solving Quadratic Equations

Today, we are going to solve quadratic equations by finding square roots and x-intercepts.

Solutions
roots
x-intercepts
zeros

} synonyms

We can solve some equations easily by graphing. Just sketch the parabola and notice where it crosses the x-axis, since the x-axis is where $y = 0$.



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You can also solve quadratic equations by solving for x. (You can only do this when there is only one type of x, either x or x^2 . We will be learning many other ways to solve for x when there is both x and x^2 .)

Solve each equation

$t^2 - 25 = 0$ $+25 \quad +25$ $t^2 = 25$ $\sqrt{t^2} = \pm \sqrt{25}$ $t = \pm 5$	$3n^2 + 12 = 12$ $-12 \quad -12$ $\frac{3n^2}{3} = \frac{0}{3}$ $n^2 = 0$ $\sqrt{n^2} = \sqrt{0}$ $n = 0$	$2g^2 + 32 = 0$ $-32 \quad -32$ $\frac{2g^2}{2} = \frac{-32}{2}$ $g^2 = -16$ $\sqrt{g^2} = \pm \sqrt{-16}$ no solutions
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A city is planning a circular fountain. The depth of the fountain will be 3 feet. The maximum volume will be 1800 ft^3 . Find the radius of the fountain. $V = \pi r^2 h$

$$\frac{1800}{3} = \frac{\pi r^2 (3)}{3}$$

$$\frac{600}{\pi} = \frac{\pi r^2}{\pi}$$

$$191 \approx r^2$$

$$\sqrt{191} = \sqrt{r^2}$$

$$13.8 \approx r$$

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