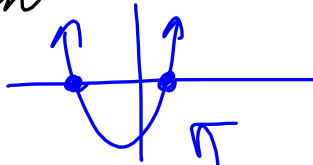


# Sec. 9.3 Solving Quadratic Equations

Standard form  $ax^2 + bx + c = 0$



$y = 0$

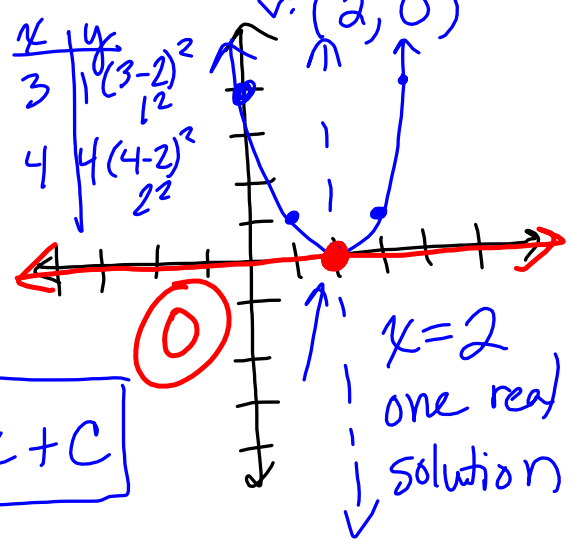
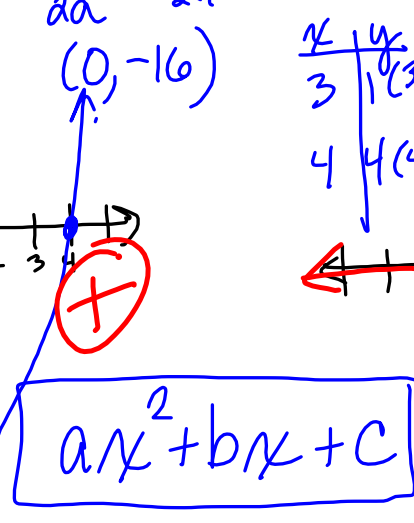
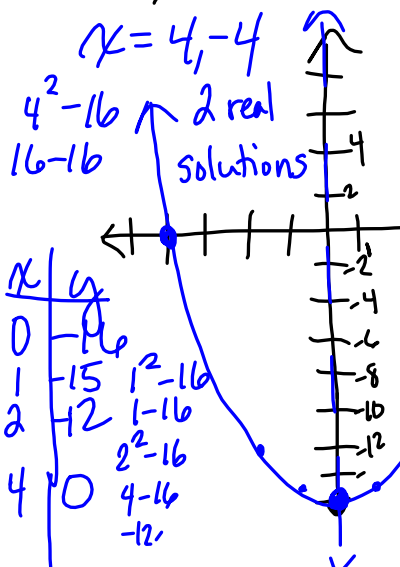
where the parabola crosses the x-axis ( $y=0$ )

so x-values/solutions are x-intercepts roots of the equation zeros of the function

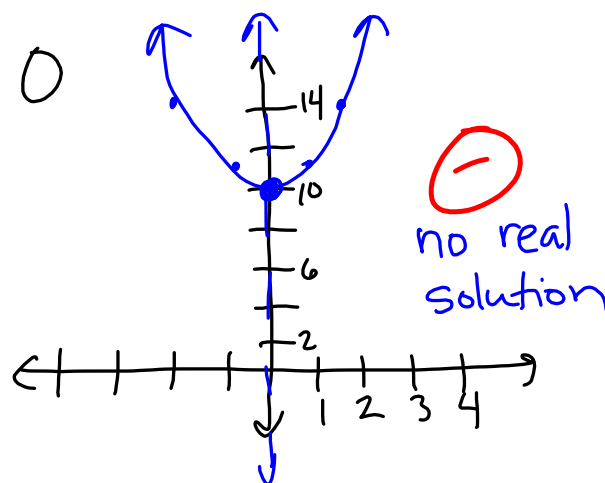
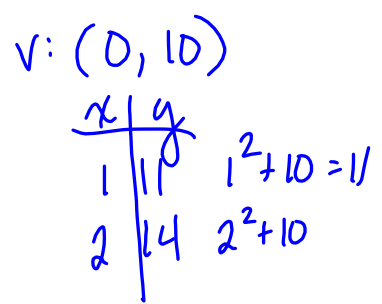
Problem 1: What are the solutions of each equation? Use a graph of the related function.

a.  $x^2 - 16 = 0$  vertex  $-\frac{b}{2a} = -\frac{0}{2 \cdot 1} = 0$

b.  $(x-2)^2 = 0$



c.  $x^2 + 10 = 0$



Problem 2: Solve

$$a. \quad \begin{array}{r} 5x^2 - 45 = 0 \\ + 45 \quad + 45 \\ \hline \end{array}$$

$$\frac{5x^2}{5} = \frac{45}{5}$$

$$x^2 = 9 \quad \sqrt{x^2 = \pm\sqrt{9}}$$

$$\boxed{x = \pm 3}$$

$$b. \quad \begin{array}{r} 3x^2 + 15 = 0 \\ -15 \quad -15 \\ \hline \end{array}$$

$$\text{no solution} \quad \frac{3x^2}{3} = \frac{-15}{3}$$

$$\sqrt{x^2} = \sqrt{-5}$$

$$x = \pm \sqrt{-5}$$

$$c. \quad \begin{array}{r} 4d^2 + 16 = 16 \\ -16 \quad -16 \\ \hline \end{array}$$

$$\frac{4d^2}{4} = \frac{0}{4}$$

$$d^2 = 0$$

$$d = \pm\sqrt{0} = 0$$

$$\boxed{d=0}$$

$$d. \quad \begin{array}{r} 64b^2 - 6 = 10 \\ +6 \quad +6 \\ \hline \end{array}$$

$$\frac{64b^2}{64} = \frac{16}{64} = \frac{2}{8}$$

$$b^2 = \frac{1}{4}$$

$$b = \pm\sqrt{\frac{1}{4}} = \pm\frac{1}{2}$$

Problem 3:

The length of a rectangular prism is three times the width. The height of the prism is 5 in. If the volume of the prism is  $80 \text{ in}^3$ , what is the length of the prism? Round to the nearest tenth of