

A. Y-Intercepts



To calculate the y-intercept of a quadratic function we substitute 0 in for x. Determine the y-intercept for the following:

1) $y = x^2 - 4x + 5$

$$y = (0^2) - 4(0) + 5$$

$$y = 5$$

(2) $y = 7x^2 - 5x + 2$

$$y = 7(0^2) - 5(0) + 2$$

$$y = 2$$

B. X-Intercepts

To calculate the x-intercept of a quadratic function we substitute 0 in for y and solve for x. Determine the x-intercept for the following:

1) $y = (x-3)^2$
 $\sqrt{0} = \sqrt{(x-3)^2}$

$$0 = x - 3$$

$$+3 \quad +3$$

$$3 = x$$

(2) $y = (x+4)^2 - 81$

$$0 = (x+4)^2 - 81$$

$$+81 \quad +81$$

$$\sqrt{81} = \sqrt{(x+4)^2}$$

$$9 \times 9 = 81 \quad \pm 9 = x + 4$$

$$-9 \times -9 = 81 \quad -4 \pm 9 = x$$

$$-4 + 9 = 5$$

$$-4 - 9 = -13$$

3) $y = x^2 - 2x - 24$

$$0 = x^2 - 2x - 24$$

$$0 = (x-6)(x+4)$$

$$x-6=0 \quad ; \quad x+4=0$$

$$x=6 \quad ; \quad x=-4$$

(4) $y = x^2 + 3x - 40$

$$0 = x^2 + 3x - 40$$

$$0 = (x+8)(x-5)$$

$$x+8=0 \quad ; \quad x-5=0$$

$$x=-8 \quad ; \quad x=5$$

5) $y = -3(x-12)^2 + 27$

$$0 = -3(x-12)^2 + 27$$

$$-27 = -3(x-12)^2$$

$$\frac{-3}{-3} \quad \frac{-3}{-3}$$

$$\sqrt{9} = \sqrt{(x-12)^2}$$

$$\pm 3 = x - 12$$

$$12 \pm 3 = x \quad \begin{cases} 12+3=15 \\ 12-3=9 \end{cases}$$

$$\sqrt{-9} = \sqrt{(x-12)^2}$$

none