

Alg. 1B Handwritten Quiz

$$y = x^2 - 6x - 27$$

Quadratic Formula:

$$a = 1 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$b = -6 \quad 2a$$

$$c = -27 \quad x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4 \cdot 1 \cdot (-27)}}{2(1)}$$

$$x = \frac{6 \pm \sqrt{36 + 108}}{2}$$

$$x = \frac{6 \pm \sqrt{144}}{2}$$

$$x = \frac{6 \pm 12}{2}$$

$$x = \frac{6+12}{2} \quad x = \frac{6-12}{2}$$

$$x = \frac{18}{2} \quad x = \frac{-6}{2}$$

$$x = 9 \quad x = -3$$

Roots: 9, -3

Factoring:

$$x^2 - 6x - 27 = 0$$

$$(x-9)(x+3) = 0$$

$$x-9=0 \quad x+3=0$$

$$+9+9 \quad -3-3$$

$$x=9 \quad x=-3$$

Roots: 9, -3

Vertex (Axis of Symmetry):

$$x = \frac{-b}{2a}$$

$$x = \frac{-(-6)}{2(1)} = \frac{6}{2} = 3 \leftarrow \text{"axis of symmetry"}$$

$$y = x^2 - 6x - 27$$

$$y = 3^2 - 6(3) - 27$$

$$y = 9 - 18 - 27$$

$$y = -9 - 27$$

$$y = -36$$

$(3, -36) \leftarrow \text{vertex}$

Completing the Square:

$$x^2 - 6x - 27 = 0$$

$$+27 \quad +27$$

$$x^2 - 6x = 27$$

$$\frac{-6}{2} = -3 \quad (-3)^2 = 9$$

$$x^2 - 6x + 9 = 27 + 9$$

$$(x-3)(x-3) = 36$$

$$\sqrt{(x-3)^2} = \pm \sqrt{36}$$

$$x-3 = \pm 6$$

$$x-3 = 6 \quad x-3 = -6$$

$$+3 \quad +3$$

$$x = 9 \quad x = -3$$

Roots: 9, -3

Graphing:

