

# Algebra 1B Handwritten Quiz

Given:  $y = x^2 - 4x - 45$   
Completing Square

$$x^2 - 4x - 45 = 0$$

$$+45 \quad +45$$

$$\begin{array}{r} x^2 - 4x = +45 \\ +4 \quad +4 \end{array}$$

$$\frac{x^2 - 4x + 4}{2} = \frac{49}{2} \quad \frac{-4}{2} = -2$$

$$\cancel{(x-2)^2} = 49$$

$$\cancel{(x-2)} = \pm 7$$

$$\begin{array}{l} 2-7 = \boxed{-5} \\ 2+7 = \boxed{9} \end{array} \text{ - roots}$$

## Factoring

$$x^2 - 4x - 45 = 0$$

$$(x-9)(x+5)$$

$$\begin{array}{l} x-9=0 \quad x+5=0 \\ +9+9 \quad -5-5 \end{array}$$

$$= \boxed{9} (9,0) = \boxed{-5} (0,-5)$$

roots

Vertex  $a=1 \quad b=-4 \quad c=-45$

$$\frac{-b}{2a} = \frac{-(-4)}{2(1)} = \frac{4}{2} = 2$$

$$\cancel{x^2 - 4x - 45 = 0}$$

$$2^2 - 4(2) - 45$$

$$4 - 8 - 45 = -49$$

$$\boxed{(2, -49)} \text{ roots}$$

## Quadratic Formula

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

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-45)}}{2(1)}$$

$$x = 4 \pm \sqrt{16 + 180}$$

~~$$x = 4 \pm \sqrt{196}$$~~

$$x = 4 \pm \sqrt{196}$$

$$x = 4 \pm 14$$

$$4 + 14 = 18 = \boxed{9}$$

$$4 - 14 = -10 = \boxed{-5}$$

roots

## Graph

