

Algebra 1B Handwritten

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

Completing the Square

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

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

$$x^2 - 4x + 4 = 49$$

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

$$x - 2 = 7$$

$$x = 2 \pm 7$$

roots: $(9, 0)$ and $(-5, 0)$

add to both sides

$$\left(\frac{-b}{2}\right)^2$$

$$\left(\frac{4}{2}\right)^2 = 4$$

Quiz

$$x = \frac{4 \pm \sqrt{16 + 180}}{2}$$

$$x = \frac{4 \pm \sqrt{196}}{2}$$

$$x = \frac{4 \pm 14}{2}$$

~~$$x = \frac{4 \pm 14}{2}$$~~

$$x = 2 \pm 7$$

roots: $(9, 0)$ and $(-5, 0)$

Vertex

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

axis of symmetry

Factoring

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

$$x - 9 = 0 \quad x + 5 = 0$$

$$x = 9$$

$$x = -5$$

roots: $(9, 0)$ and $(-5, 0)$

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

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

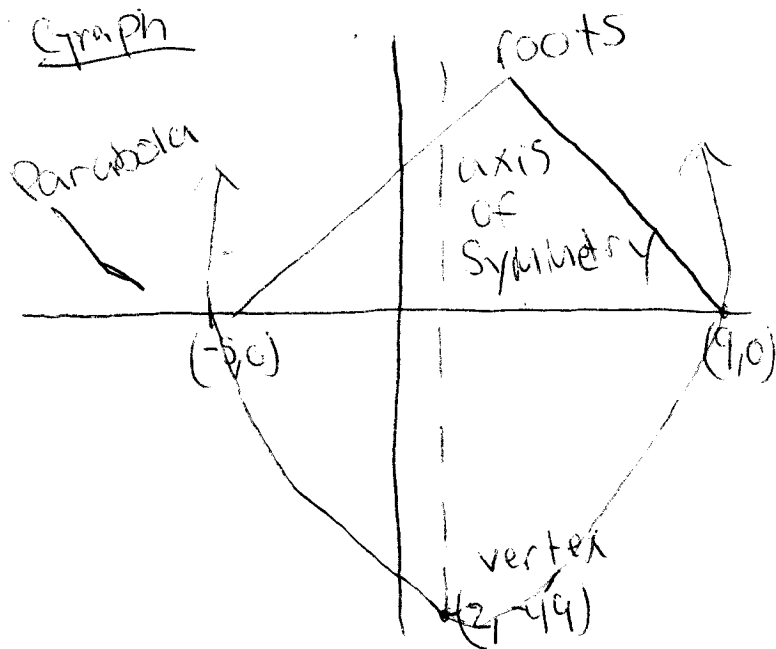
$$y = 4 - 8 - 45$$

$$y = -4 - 45$$

$$y = -49$$

vertex: $(2, -49)$

Graph



Quadratic Formula

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

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

$$x = \frac{4 \pm \sqrt{16 + 180}}{2}$$