

8th Grade 10.2 Re-Teaching

Name: Falk/upchurch

Directions: Graph each of the following quadratic equations

1. $y = x^2 + 10x + 14$ $a=1$ $b=10$ $c=14$

a. Find the axis of symmetry and graph it

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

$$X = \frac{-10}{2 \cdot 1} = \frac{-10}{2} = -5 \quad \boxed{X = -5}$$

b. Find the vertex and graph it

$$y = (-5)^2 + 10(-5) + 14$$

$$y = 25 - 50 + 14$$

$$y = -25 + 14 = -11 \quad \boxed{(-5, -11)}$$

c. The parabola opens upward / downward

d. Find the y-intercept and graph it (then reflect it!)

e. Find another point, graph it, and reflect it

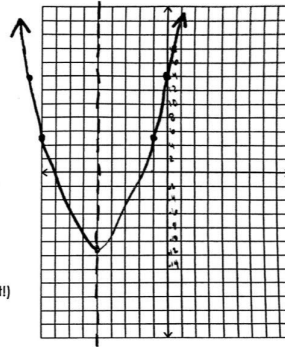
$$y = (-1)^2 + 10(-1) + 14$$

$$y = 1 - 10 + 14$$

$$y = -9 + 14$$

$$y = 5 \quad \boxed{(-1, 5)}$$

f. Draw the parabola



2. $y = -4x^2 + 24x + 13$ $a=-4$ $b=24$ $c=13$

a. Find the axis of symmetry and graph it

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

$$X = \frac{-24}{2 \cdot -4} = \frac{-24}{-8} = 3 \quad \boxed{X = 3}$$

b. Find the vertex and graph it

$$y = -4 \cdot 3^2 + 24 \cdot 3 + 13$$

$$y = -36 + 72 + 13$$

$$y = 36 + 13 = 49 \quad \boxed{(3, 49)}$$

c. The parabola opens: upward / downward

d. Find the y-intercept and graph it (then reflect it!)

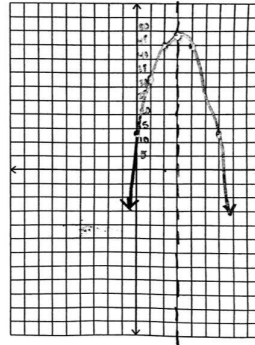
e. Find another point, graph it, and reflect it

$$y = -4 \cdot 2^2 + 24 \cdot 2 + 13$$

$$y = -16 + 48 + 13$$

$$y = 45 \quad \boxed{(2, 45)}$$

f. Draw the parabola



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Name: _____

3. $y = -x^2 + 6x + 5$ $a=-1$ $b=6$ $c=5$

a. Find the axis of symmetry and graph it

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

$$X = \frac{-6}{2 \cdot -1} = \frac{-6}{-2} = 3 \quad \boxed{X = 3}$$

b. Find the vertex and graph it

$$y = -3^2 + 6 \cdot 3 + 5$$

$$y = -9 + 18 + 5$$

$$y = 14 \quad \boxed{(3, 14)}$$

c. The parabola opens: upward / downward

d. Find the y-intercept and graph it (then reflect it!)

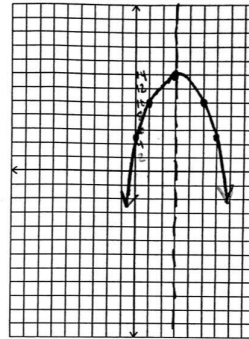
e. Find another point, graph it, and reflect it

$$y = -1^2 + 6 \cdot 1 + 5$$

$$y = -1 + 6 + 5$$

$$y = 10 \quad \boxed{(1, 10)}$$

f. Draw the parabola



4. $y = 6x^2 + 48x + 98$ $a=6$ $b=48$ $c=98$

a. Find the axis of symmetry and graph it

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

$$X = \frac{-48}{2 \cdot 6} = \frac{-48}{12} = -4 \quad \boxed{X = -4}$$

b. Find the vertex and graph it

$$y = 6(-4)^2 + 48(-4) + 98$$

$$y = 96 - 192 + 98$$

$$y = 2 \quad \boxed{(-4, 2)}$$

c. The parabola opens: upward / downward

d. Find the y-intercept and graph it (then reflect it!)

e. Find another point, graph it, and reflect it

$$y = 6(-1)^2 + 48(-1) + 98$$

$$y = 6 - 48 + 98$$

$$y = 56 \quad \boxed{(-1, 56)}$$

f. Draw the parabola

