

Algebra II
Quad. Review #2

Name _____

1. If the solutions to a quadratic function are $x = -10$ and $x = 7$, write the function in standard form.

2. Solve the following quadratic equations by factoring. (No GC)

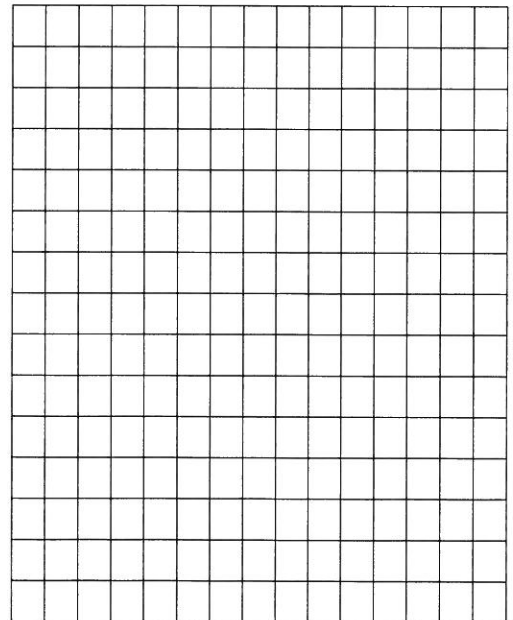
a. $4x^2 - 100 = 0$

b. $6x^2 = -5x + 21$

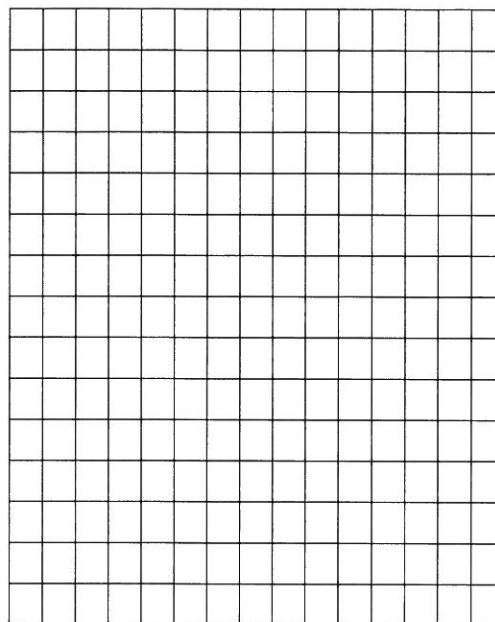
3. Solve the following quadratic equation by graphing. $f(x) = x^2 - 3x - 1$

Directions: For each of the following find the vertex, axis of symmetry, y-intercept, domain, range, maximum/minimum value, and find the x-intercepts. State the transformations and sketch the quadratic. (No GC)

4. $f(x) = (x - 2)^2 - 16$



5. $y = -x^2 + 2x + 3$



6. The height of a bridge is given by $h(x) = -3x^2 + x$, where $h(x)$ is the height of the bridge (in miles) and x is the number of miles from the base of the bridge.

a. How far from the base of the bridge does the maximum height occur?

b. What is the maximum height of the bridge?

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Name _____

1. If the solutions to a quadratic function are $x = -10$ and $x = 7$, write the function in standard form.

$$(x+10)(x-7) = f(x)$$

$$x^2 + 3x - 70 = f(x)$$

2. Solve the following quadratic equations by factoring. (No GC)

a. $4x^2 - 100 = 0$

$$4(x^2 - 25) = 0$$

$$4(x-5)(x+5) = 0$$

$$x = 5, x = -5$$

b. $6x^2 = -5x + 21$

$$6x^2 + 5x - 21 = 0$$

$$(2x-3)(3x+7) = 0$$

$$x = \frac{3}{2} \quad x = -\frac{7}{3}$$

	$3x + 7$	
$2x$	$6x^2$	$14x$
-3	$-9x$	-21

$-126 = 14 \cdot -9$
 $5 = 14 + -9$

3. Solve the following quadratic equation by graphing. $f(x) = x^2 - 3x - 1$

$$x = -0.303 \quad x = 3.3$$

Directions: For each of the following find the vertex, axis of symmetry, y-intercept, domain, range, maximum/minimum value, and find the x-intercepts. State the transformations and sketch the quadratic. (No GC)

4. $f(x) = (x-2)^2 - 16$

$V(2, -16)$

$x = 2$

$(0, -12)$

$D: \mathbb{R}$

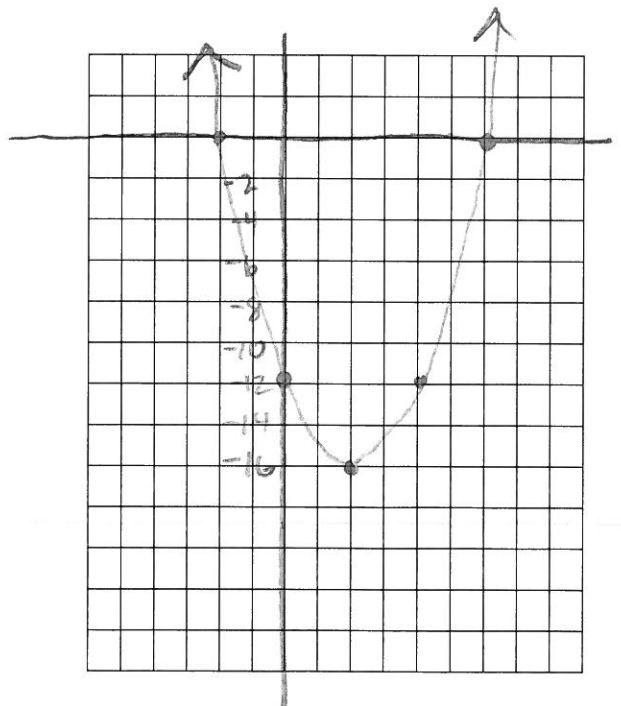
$R: y \geq -16$

$\min = -16$

Transformations

right 2

down 16



$$(x-2)^2 - 16 = 0$$

$$(x-2)(x-2) - 16 = 0$$

$$x^2 - 4x - 12 = 0$$

$$(x-6)(x+2) = 0$$

$(6, 0) \quad (-2, 0)$

$$5. y = -x^2 + 2x + 3$$

$$\frac{-2}{2(-1)} = 1$$

$$-1^2 + 2(1) + 3 = 4$$

$$V (1, 4)$$

$$x = 1$$

$$(0, 3)$$

$$D: \mathbb{R}$$

$$R: y \leq 4$$

$$\text{max} = 4$$

$$\frac{x-1 \pm 1}{2}$$

$$(x+1)(-x+3) = 0$$

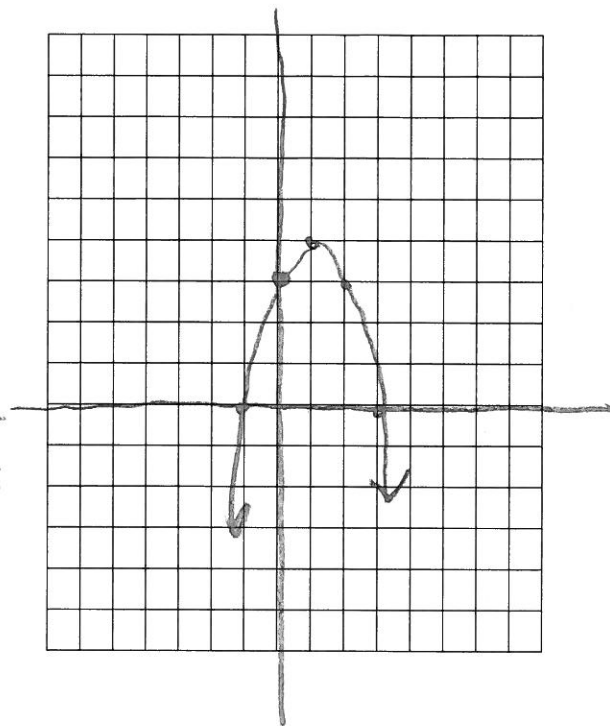
$$(-1, 0) (3, 0)$$

Transformations

reflect over x-axis

right 1

up 4



6. The height of a bridge is given by $h(x) = -3x^2 + x$, where $h(x)$ is the height of the bridge (in miles) and x is the number of miles from the base of the bridge.

a. How far from the base of the bridge does the maximum height occur?

Use graphing calculator to find vertex (.167 miles)

or

$$\frac{-1}{2(-3)} = \frac{1}{6} \text{ miles}$$

b. What is the maximum height of the bridge?

Use graphing calculator to find y-coord of vertex (.083 miles high)

or

$$-3\left(\frac{1}{6}\right)^2 + \frac{1}{6} = \frac{1}{12} \text{ miles high}$$