

Name _____

Date _____

Advanced Algebra

Quadratic Review Assignment #23 Test Review #2

1. Which of the following expressions is equivalent to $6x^2 + 5x - 6$

| A | B | C | D |
|-------------------|--------------------|--------------------|-------------------|
| $(6x + 1)(x - 5)$ | $(2x + 3)(3x - 2)$ | $(2x - 5)(3x + 1)$ | $(6x - 5)(x + 1)$ |

2. Which of the following is equivalent to $5x^2 - 28x - 12$?

$\frac{28}{10} (2.8, -51.2)$

| A | B | C | D |
|-----------------------|-----------------------|-----------------------|---------------------|
| $5(x + 2.8)^2 + 51.2$ | $5(x - 3.6)^2 - 51.2$ | $5(x - 2.8)^2 - 51.2$ | $5(x - 1.8)^2 - 12$ |

3) Which of the following is equivalent to $5(x-2)^2+4$

| A | B | C | D |
|-------------------|------------------|-------------------|------------|
| $5x^2 - 20x + 24$ | $5x^2 - 6x + 12$ | $5x^2 - 18x + 19$ | $5x^2 + 8$ |

$$5(x^2 - 4x + 4)$$

$$5x^2 - 20x + 20 + 4$$

4) Factor $y = 2x^2 - 20x + 42$

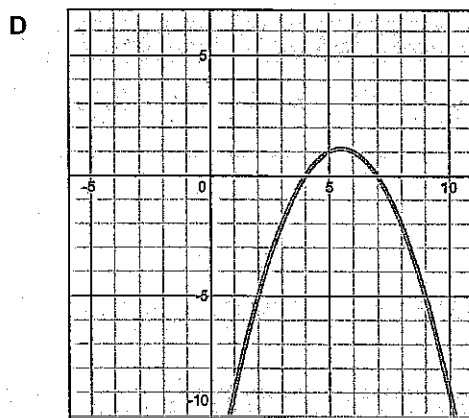
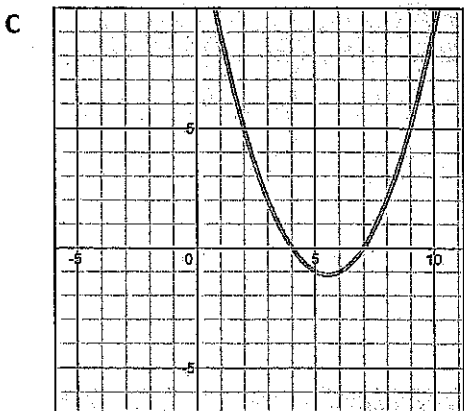
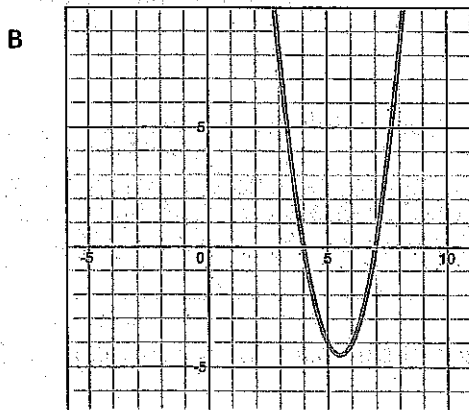
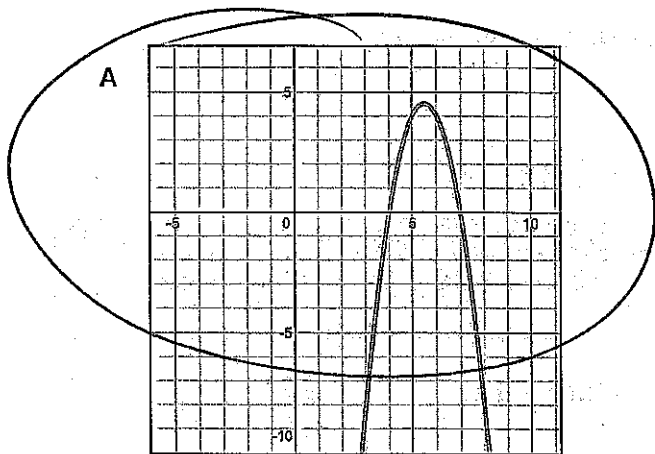
$$(2x - 14)(x - 3)$$

Final answer:

$$(2x - 14)(x - 3)$$

Vertex $\frac{4+7}{2} (5.5, 4.5)$

3. Circle the letter of the graph that matches this equation: $y = -2(x - 4)(x - 7)$.



4. A parabola has roots at 8 and -4 and the parabola passes through the point (2, -72). Write the equation of this parabola in both factored form and in general form ($y = ax^2 + bx + c$)

$$y = a(x-8)(x+4)$$

$$-72 = a(2-8)(2+4)$$

$$-72 = -36a$$

$$a = 2$$

$$y = 2(x-8)(x+4)$$

$$2(x^2 - 4x - 32)$$

$$2x^2 - 8x - 64$$

Final answer in factored form:

$$y = 2(x-8)(x+4)$$

Final answer in general form:

$$y = 2x^2 - 8x - 64$$

5) Using the axis of symmetry formula $x = \frac{-b}{2a}$ find the vertex of the given parabola. (Your answer should be in the form (x,y)). Then write the equation in vertex form

$$y = 6x^2 + 36x + 36$$

$$-\frac{36}{12} \left(-3, -18 \right)$$

Vertex

$$(-3, -18)$$

Vertex form:

$$y = 6(x+3)^2 - 18$$

6) Fill in the missing forms in each row. You may do scratch work on the side of the paper.

| General Form | Factored Form | Vertex Form |
|-------------------|-------------------|------------------------|
| $x^2 + 11x + 24$ | $(x+8)(x+3)$ | $y = (x+5.5)^2 - 6.25$ |
| $3x^2 + 12x - 36$ | $3(x-2)(x+6)$ | $y = 3(x+2)^2 - 48$ |
| $3x^2 - 24x + 30$ | $3(x-6.4)(x-1.6)$ | $3(x-4)^2 - 18$ |

$$\frac{-8+3}{2}$$

$$(-5.5, -6.25)$$

$$3(x^2 - 8x + 16)$$

$$3x^2 - 24x + 48 - 18$$

$$3x^2 - 24x + 30$$

Roots

$$3(x-4)^2 - 18 = 0$$

$$(x-4)^2 = 6$$

$$(x-4)^2 = \pm\sqrt{6}$$

$$x = 4 \pm \sqrt{6}$$

$$4 + \sqrt{6} = 6.4$$

$$4 - \sqrt{6} = 1.6$$

Remembering the discriminant is b^2-4ac

7) Given the quadratic function is $y=5x^2-6x+1$

a) Find the discriminant

$$36 - 4(5)(1)$$

a) Write your answer here:

16

b) Continue on with the problem using the quadratic formula to find the roots.

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

b) Write your two roots here:

1 And $\frac{1}{5}$

$$\frac{6 \pm \sqrt{16}}{10}$$

$$\frac{6 \pm 4}{10} \begin{cases} 1 \\ \frac{2}{10} \text{ or } \frac{1}{5} \end{cases}$$

Jim throws a ball into the air. The height of the stone can be modeled by the equation $f(t) = -1.875x^2 + 7.25x + 1$ where t is the time in seconds that has passed since the stone was thrown and $f(t)$ is the height of the stone.

$$f(t) = -1.875x^2 + 7.25x + 1$$

a) What is the max height of the ball?

8 meters

$$\frac{-7.25}{[2 \cdot (-1.875)]} = (1.933, \underline{8})$$

b) What are the roots of this equation?

$$\frac{-7.25 \pm \sqrt{7.25^2 - 4(-1.875)(1)}}{(2 \cdot -1.875)}$$

c) What do they mean in this scenario?

Ball is in the Air for 4 seconds!

$$\frac{-7.25 \pm \sqrt{60.0625}}{-3.75} \begin{matrix} -0.133 \\ 4 \end{matrix}$$

