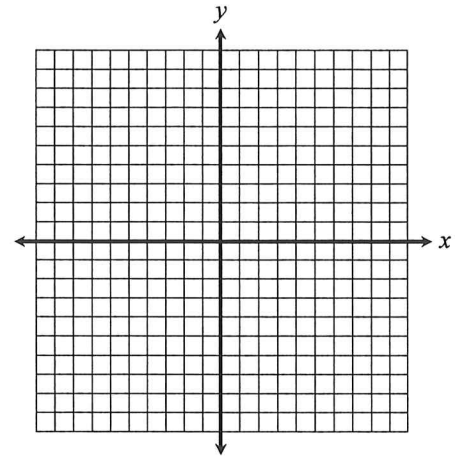


## Quadratic Roots

**Date:**

1. What are quadratic roots?
2. What else are quadratic roots referred to as?
3. Find the roots by graphing:  $f(x) = -x^2 + 2x + 8$



## Factoring Review

**Date:**

**Factor each polynomial completely:**

1.  $x^2 - 14x - 95$

2.  $5x^2 - 40x + 80$

3.  $4x^2 - x - 14$

4.  $16x^2 - 49$

5.  $5 - 20x^2$

6.  $24x^2 - 10x$

# Skip for Unit 4 Review

## Converting Standard Form to Vertex Form

**Date:**

**Write each function in vertex form. Identify the vertex.**

1.  $f(x) = x^2 - 8x + 19$

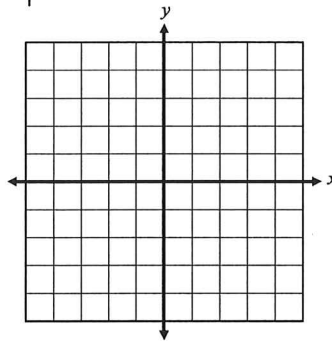
2.  $f(x) = -2x^2 - 4x + 14$

## Function Families Review

**Date:**

**Graph each function and give its characteristics.**

1.  $f(x) = -|x + 2| + 5$



Parent Function: \_\_\_\_\_

D: \_\_\_\_\_; R: \_\_\_\_\_

Number of roots: \_\_\_\_\_

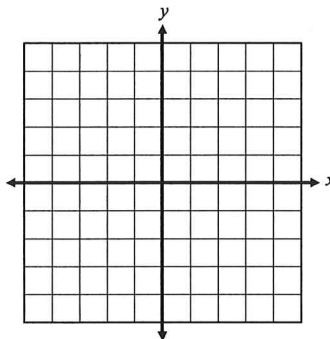
End Behavior: As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_

As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_

Increasing Interval: \_\_\_\_\_

Decreasing Interval: \_\_\_\_\_

2.  $f(x) = \frac{6}{5}x - 1$



Parent Function: \_\_\_\_\_

D: \_\_\_\_\_; R: \_\_\_\_\_

Number of roots: \_\_\_\_\_

End Behavior: As  $x \rightarrow \infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_

As  $x \rightarrow -\infty$ ,  $f(x) \rightarrow$  \_\_\_\_\_

Increasing Interval: \_\_\_\_\_

Decreasing Interval: \_\_\_\_\_

**Solving  
Quadratics by  
Factoring**

**Date:**

**Solve each quadratic equation by factoring:**

**1.**  $x^2 + 11x + 30 = 0$

**2.**  $2x^2 + x = 2x + 6$

**3.**  $4x^2 - 74 = x^2 + 1$

**4.**  $8x^2 + 43x = 7x$

**Factored Form  
vs.  
Vertex Form**

**Date:**

**1.** What are the roots of the quadratic equation below?

$$f(x) = (3x + 2)(x - 4)$$

**2.** Write the equation below in factored form and vertex form.  
Give the axis of symmetry, vertex, and roots.

$$f(x) = -x^2 - 12x - 27$$

**Solving  
Quadratics by  
Square Roots**

**Date:**

**Solve each quadratic equation by square roots:**

**1.**  $x^2 - 10 = 159$

**2.**  $36x^2 - 1 = 0$

**3.**  $2x^2 + 7 = 41$

**4.**  $-\frac{2}{3}x^2 - 19 = -35$

**Imaginary  
Numbers**

**Date:**

**Simplify each expression:**

**1.**  $\sqrt{-16}$

**2.**  $\sqrt{-5} \cdot \sqrt{-12} \cdot \sqrt{-3}$

**3.**  $14i \cdot 3i$

**4.**  $i^{67}$

**Solve the equations below:**

**5.**  $x^2 + 100 = 0$

**6.**  $7 - 3x^2 = 211$

## Complex Numbers

**Date:**

**Simplify each expression:**

1.  $(-9 - i) - (4 - 3i)$

2.  $(2 + 5i)(-4 - 3i)$

3.  $\frac{14}{2i}$

4.  $\frac{4 - 5i}{2 + 4i}$

**Simplify, then name all sets to which the value belongs:**

5.  $\sqrt{-6} \cdot \sqrt{-3}$

6.  $i^{22}$

## Completing the Square

**Date:**

**Solve by completing the square:**

1.  $x^2 + 12x + 47 = 0$

2.  $-4x^2 + 408 = 20 - 8x$

<b>The Quadratic Formula</b>	<b>Date:</b>
	<b>Solve by the quadratic formula:</b> <b>1.</b> $10x^2 - 9x = 2x + 6$          <b>2.</b> $-x^2 = 8x + 26$

<b>The Discriminant</b>	<b>Date:</b>
	<b>Find the discriminant, then determine the number and type of roots:</b> <b>1.</b> $-2x^2 + 14x - 23 = 0$ <b>2.</b> $16x^2 - 8x + 1 = 0$          <b>3.</b> $x^2 - 10x + 31 = 0$ <b>4.</b> $3x^2 - 12 = 0$

**Choosing the Best Method**

**Date:**

**Solve one equation by factoring and the other by completing the square. Explain your reasoning.**

1.  $x^2 - 14x + 37 = 0$

2.  $-x^2 - 9x + 136 = 0$

**Quadratic Applications**

**Date:**

1. The dimensions of a square are altered so that 10 inches is added to one side while 1 inch is subtracted from the other. The area of the resulting rectangle is  $80 \text{ in}^2$ . How much larger is the area of the rectangle compared to the square?
2. Find three consecutive positive even integers such that the product of the median and largest integer is 6 less than 21 times the smallest integer.

## Projectile Motion

**Date:**

The football coach threw a football from a platform to his quarterback below. The height of the football,  $h$ , at time  $t$  seconds is modeled by the equation  $h(t) = -16t^2 + 28t + 15$ .

1. What is the maximum height of the ball?
2. If the quarterback caught the ball at a height of 6 feet, how many seconds was the ball in the air?
3. Give the domain and range of the function.

## Quadratic Regression

**Date:**

The table below shows the number of homes that were listed for sale in a small community last year.

<i>Month</i>	May	June	July	Aug.	Sept.
<i># of homes</i>	73	76	80	74	68

1. Use a quadratic model to write an equation for the curve of best fit.
2. Find the approximate number of homes that were listed for sale in February.
3. Why would this particular data follow a quadratic pattern?