

NAME \_\_\_\_\_

Unit 14 Review

DATE \_\_\_\_\_

Algebra RH

Solve each quadratic equation using the square root method.

1.  $4x^2 = 64$

2.  $25x^2 = 324$

3.  $x^2 - 12 = 0$

4.  $x^2 + 9 = 0$

Solve each quadratic equation by factoring.

5.  $x(x - 1) - 6 = 0$

6.  $5x^2 + 15x = 0$

7.  $2x^2 = 18x - 28$

8.  $2x^2 + x - 15 = 0$

Solve each quadratic equation using the quadratic formula. If necessary, express answers in simplest radical form.

9.  $2x^2 + 5x + 3 = 0$

10.  $-3x^2 - 10x = 5$

11.  $x^2 = 6x - 25$

Solve the quadratic equation by completing the square. If necessary, express answers in simplest radical form.

12.  $x^2 + 10x - 23 = 0$

13.  $2x^2 - 20x + 32 = 0$

14.  $x^2 - 9x = -8$

Solve each quadratic using any method. If necessary, express answers in simplest radical form.

15.  $\frac{x-4}{x-5} = \frac{x}{3}$

16.  $(x-2)(x-4) = 6$

For each quadratic, find the discriminant and describe the nature of the roots.

17.  $x^2 - 4x + 5 = 0$

18.  $4x^2 = -4x - 1$

19.  $3x^2 + 5x = -1$

20.  $x^2 = 8x$

21. If the quadratic  $3x^2 - 2x + k = 0$  has *one real root*, find the value of  $k$ .

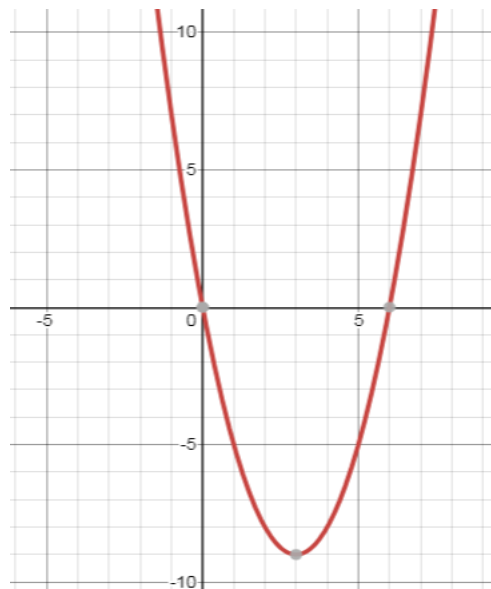
22. If the quadratic  $kx^2 + 4x + 1 = 0$  has *imaginary roots*, find all possible values of  $k$ .

23. Given the quadratics below, determine the roots (zeros).

a.  $f(x) = (x - 5)(x + 2)$

b.  $y = x^2 - 9x - 36$

c.



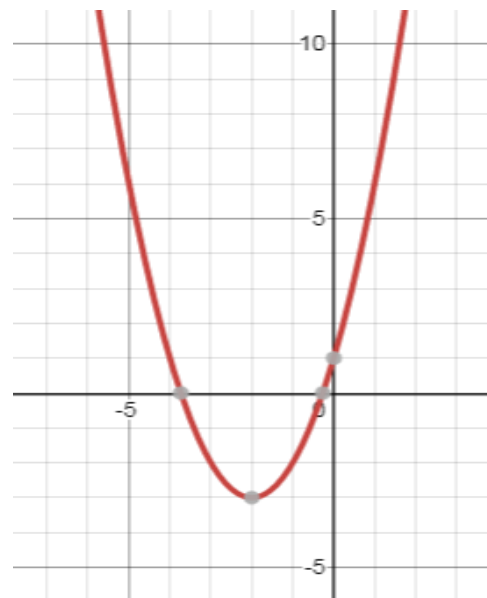
24. Write the quadratic in factored form and then state the roots.

$$y = x^2 + 2x - 15$$

25. Given the quadratics below, determine the vertex (turning point).

a.  $y = 2(x - 6)^2 - 5$

c.



b.  $f(x) = x^2 + 8x + 17$

26. Write the following quadratic in vertex form (using complete the square method) and then state the vertex.

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

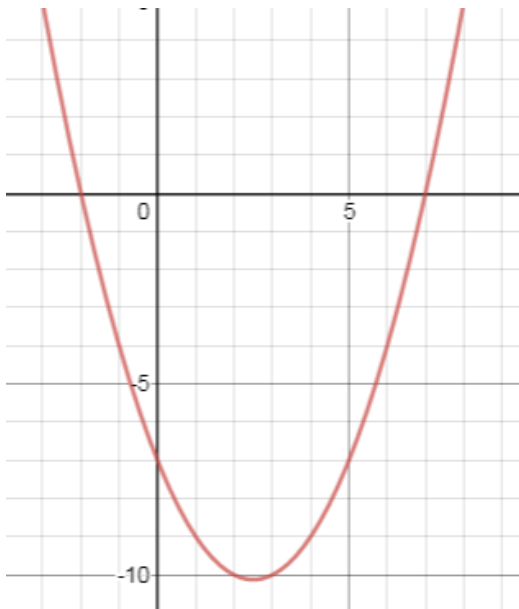
27. Determine the equation of the axis of symmetry of the quadratic below:

$$y = -4x^2 - 2x + 9$$

28. Given the following information, write the equation of the quadratic in factored form.

$$r_1 = 5, r_2 = -8, a = -4$$

29. Write the equation of the quadratic below in factored form.



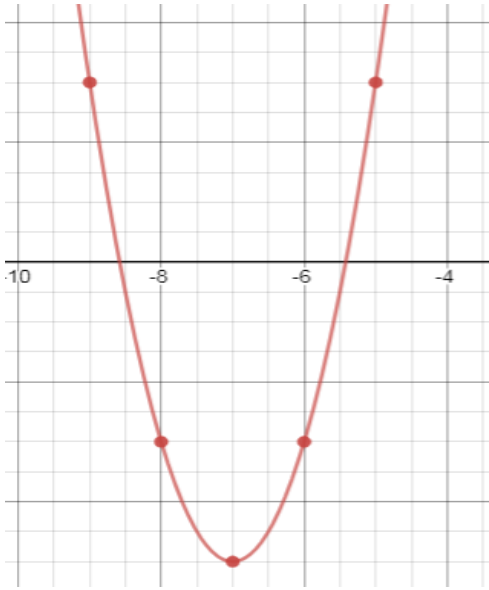
30. Given the following information, write the equation of the quadratic in vertex form.

Vertex:  $(17, 5)$ ,  $a = \frac{1}{4}$

31. Write the equation of the quadratic below in vertex form.

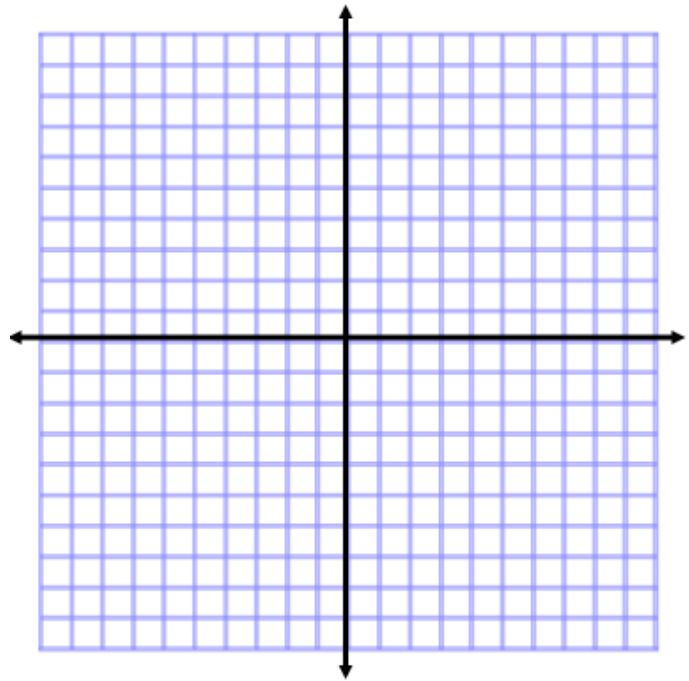


32. Write the equation of the parabola below in *standard form*.



33. Graph and label the quadratic function  $y = 2x^2 + 8x - 1$

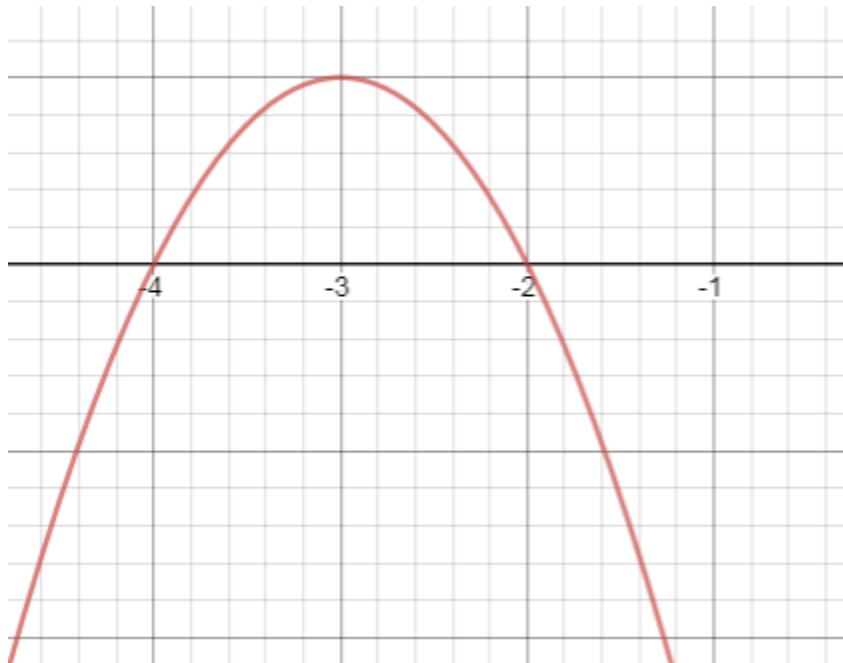
$x$	$y$



- a. Vertex: \_\_\_\_\_
- b. Maximum or minimum? \_\_\_\_\_
- c. Roots (Zeros): \_\_\_\_\_
- d. Domain: \_\_\_\_\_
- e. Range: \_\_\_\_\_
- f. Interval where increasing: \_\_\_\_\_
- g. Interval where decreasing: \_\_\_\_\_

Show work for the roots here:

34. Given the following graph below, state the:



a. End Behavior:

b. Increasing:

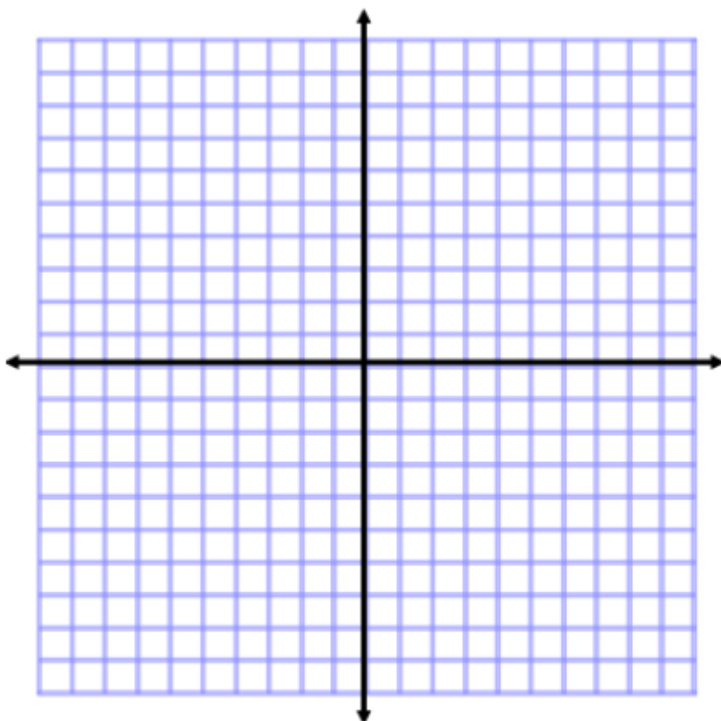
c. Decreasing:

d. Domain:

e. Range:

35. For the quadratic function  $f(x) = \frac{1}{2}x^2$  defined on the interval  $-2 \leq x \leq 4$

Graph the function for the stated interval



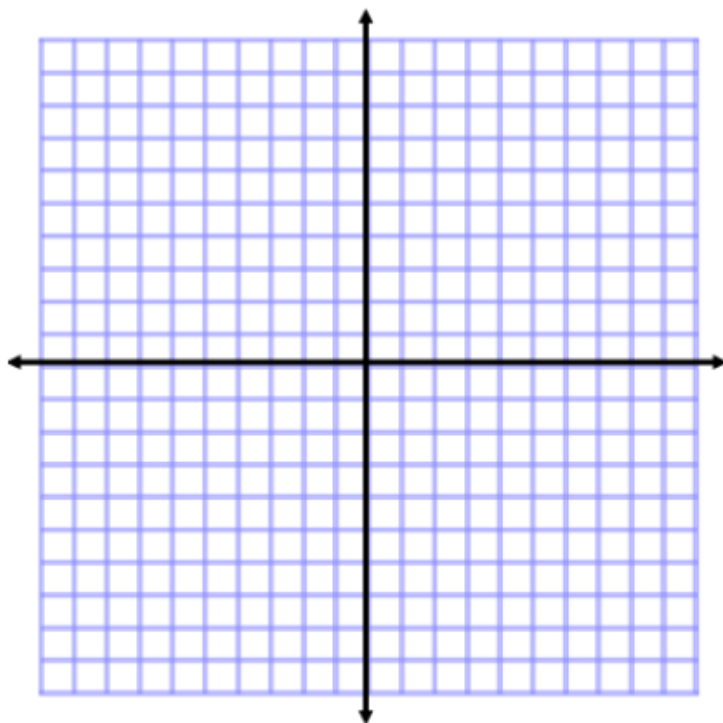
a. State the range of the function

b. State the interval on which  $f(x)$  is increasing

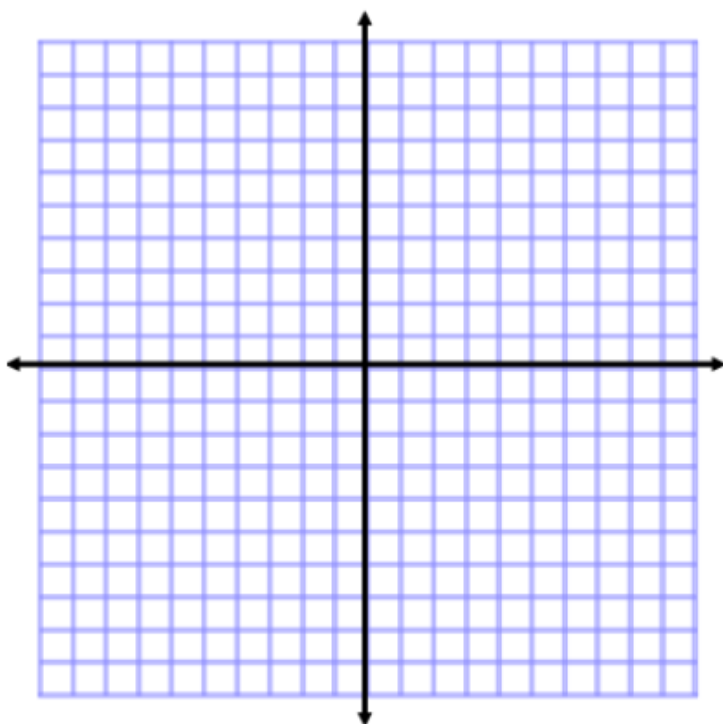
c. State the interval on which  $f(x)$  is decreasing

36. Solve the following quadratic linear systems graphically

a.  $y = x^2 - 6x + 3$   
 $y = -2x + 3$



b.  $y - x^2 = -9x + 21$   
 $4y - 8x = -40$





37. Solve the following linear quadratic systems algebraically.

a.  $y = x^2 - x - 6$   
 $y = 2x - 2$

b.  $y = x^2 - 3x - 4$   
 $y = x - 8$