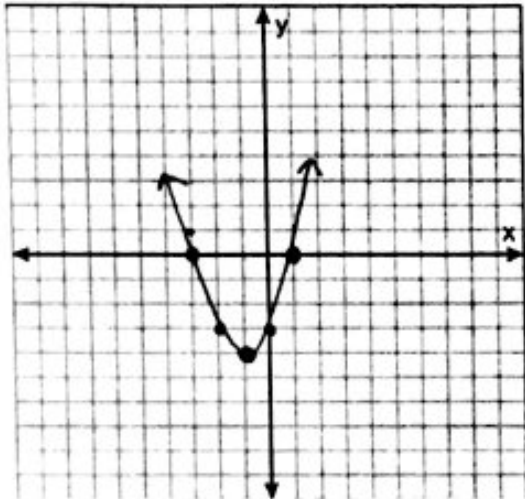


**Math 2 Cumulative Exam Review (Spring 2018)**

**Short Answer**

1. Graph  $y = (x + 1)^2 - 4$ .



2. Determine the type and number of solutions of  $8x^2 + 4x - 7 = 0$  without solving the equation. Use the discriminant.

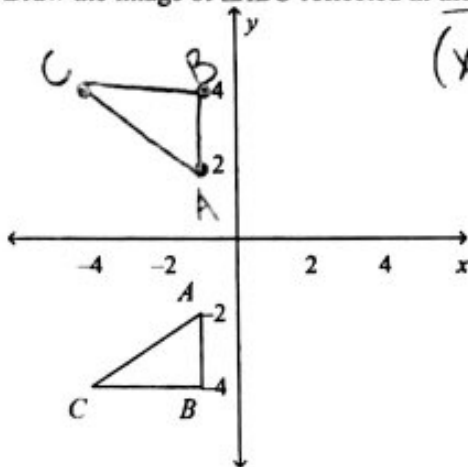
$$b^2 - 4ac$$

$$4^2 - 4(8)(-7)$$

$$240$$

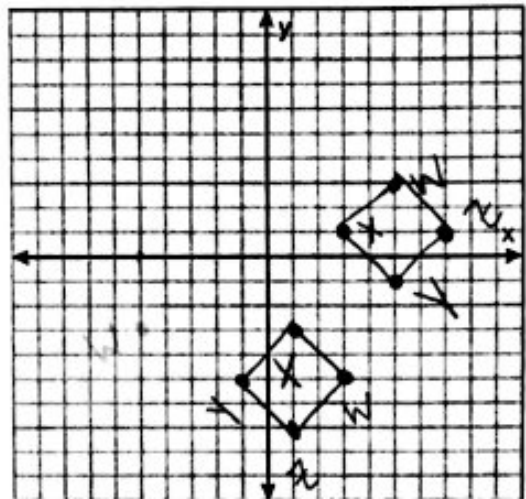
2 real

3. Draw the image of  $\triangle ABC$  reflected in the  $x$ -axis.

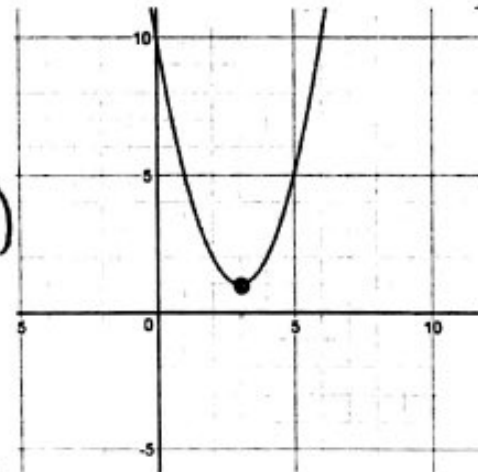


$$(x, y) \rightarrow (x, -y)$$

4. a. Graph the quadrilateral  $WXYZ$  with vertices  $W(3, -5)$ ,  $X(1, -3)$ ,  $Y(-1, -5)$ , and  $Z(1, -7)$ .  
 b. Rotate the figure  $90^\circ$  counterclockwise around the origin and graph the rotation.  $(x, y) \rightarrow (-y, x)$

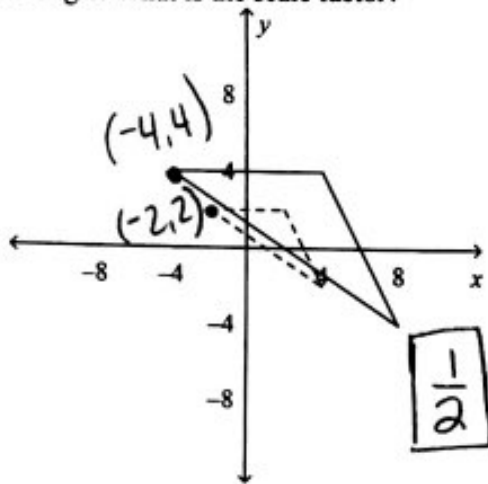


Identify the vertex and the axis of symmetry of the parabola.



vertex (3, 1)  
A.O.S.  $x = 3$

6. The dashed triangle is a dilation image of the solid triangle. What is the scale factor?

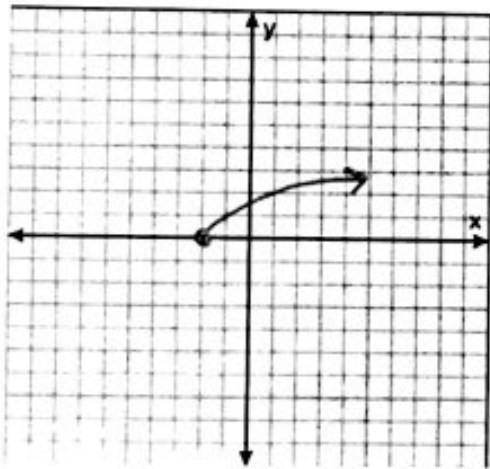


7. Mary was sitting in seat A10 at a soccer game when she discovered her ticket was for seat G5. Write a rule to describe the translation needed to put her in the proper seat.

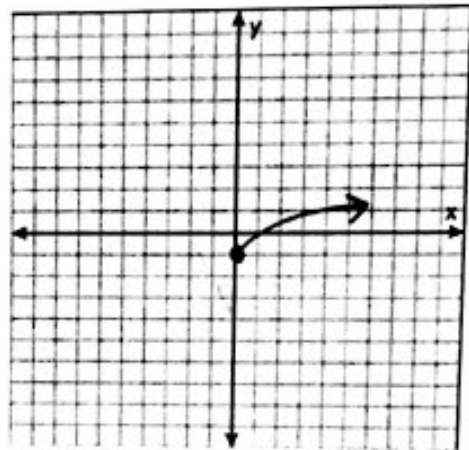
$(x+5, y-5)$

Graph the function.

8.  $y = \sqrt{x+2}$



9.  $y = \sqrt{x} - 1$



10. Find a quadratic function to model the values in the table. Predict the value of  $y$  for  $x = 5$ .

$x$	$y$
-1	-9
0	-2
3	-17

$y = -3x^2 + 4x - 2$   
 $(-57)$

Factor the expression.

11.  $x^2 + 13x + 30$   $(x+10)(x+3)$

12.  $x^2 - 14x + 45$   $(x-9)(x-5)$

13.  $3x^2 + 25x + 35$  prime

14.  $16x^2 - 49$   $(4x+7)(4x-7)$

15. The vertices of a triangle are  $P(1, 2)$ ,  $Q(-3, 8)$ , and  $R(-3, -6)$ . Name the vertices of the image reflected in the  $y$ -axis.  $(x, y) \rightarrow (-x, y)$

$P(-1, 2) \quad Q(3, 8) \quad R(3, -6)$

16. The vertices of a triangle are  $P(-4, 1)$ ,  $Q(8, 7)$ , and  $R(-4, -1)$ . Name the vertices of the image reflected in the line  $y=x$ .  $(x, y) \rightarrow (y, x)$

$P(1, -4) \quad Q(7, 8) \quad R(-1, -4)$

Solve the equation.

17.  $\sqrt{x+8} - 5 = -2$   
 $\sqrt{x+8} = 3$   
 $x+8 = 9$   
 $x = 1$

18. The function  $y = -16t^2 + 508$  models the height  $y$  in feet of a stone  $t$  seconds after it is dropped from the edge of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest hundredth of a second.

$5.63 \text{ seconds}$

19. Simplify  $\sqrt{-12}$  using the imaginary number  $i$ .

$i\sqrt{12} = i\sqrt{4}\sqrt{3}$   
 $2i\sqrt{3}$

Multiply and simplify if possible.

20.  $\sqrt{6} \cdot \sqrt{3} = \sqrt{18} = \sqrt{9}\sqrt{2}$   
 $3\sqrt{2}$

21. Use a graphing calculator to solve the equation  $3x^2 - 8x - 2 = 0$ . If necessary, round to the nearest hundredth.

$2.90$

Use the Quadratic Formula to solve the equation.

22.  $-2x^2 + 5x + 5 = 0$   
 $x = \frac{-5 \pm \sqrt{25 - 4(-2)(5)}}{2(-2)}$   
 $x = \frac{-5 \pm \sqrt{65}}{-4}$

23.  $-2x^2 - 3x + 5 = 0$

$x = \frac{3 \pm \sqrt{9 - 4(-2)(5)}}{2(-2)}$   
 $x = \frac{3 \pm \sqrt{49}}{-4} = \frac{3 \pm 7}{-4}$   
 $\frac{3+7}{-4} = \frac{10}{-4} = \frac{-5}{2}$   
 $\frac{3-7}{-4} = \frac{-4}{-4} = 1$

Rewrite the equation in vertex form.

24.  $y = x^2 - 10x + 15$   
 $25 + y - 15 = x^2 - 10x + 25$   
 $y + 10 = (x-5)^2$   
 $y = (x-5)^2 - 10$

Name: \_\_\_\_\_

ID: A

25. Write a rule to describe the transformation that is a reflection in the x-axis.

$$(x, y) \rightarrow (x, -y)$$

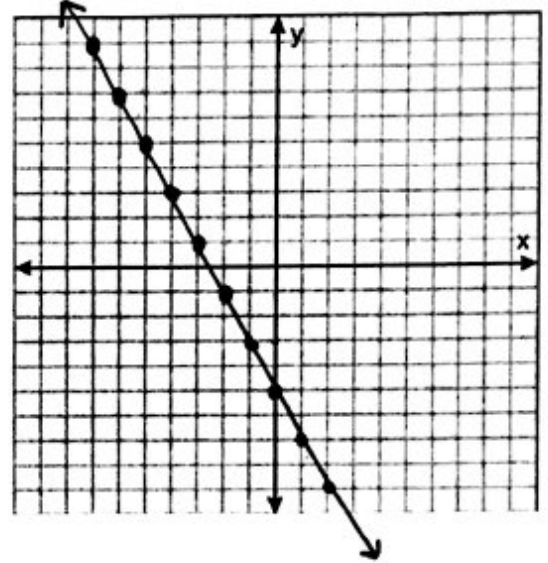
26. Write the exponential expression  $x^{\frac{3}{4}}$  in radical form.

$$\sqrt[4]{x^3}$$

27. Write a rule to describe the transformation that is a reflection in the y-axis.

$$(x, y) \rightarrow (-x, y)$$

28. Graph  $y = -2(x + 1) - 3 = -2x - 2 - 3 = -2x - 5$



**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

29. Suppose that  $x$  and  $y$  vary inversely, and  $x = 7$  when  $y = 11$ . Write the function that models the inverse variation.

a.  $y = 1.57x$

c.  $y = \frac{4}{x}$

b.  $y = \frac{77}{x}$

d.  $y = \frac{18}{x}$

$$y = \frac{k}{x}$$

$$11 = \frac{k}{7}$$

$$77 = k$$