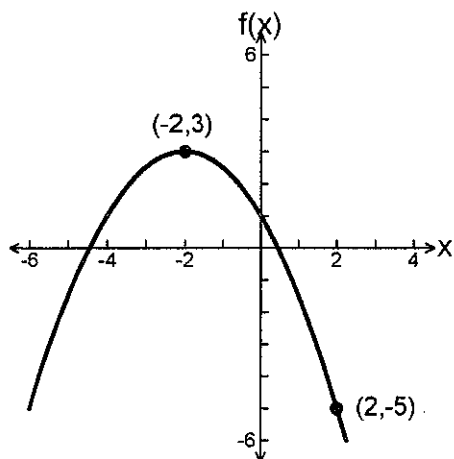


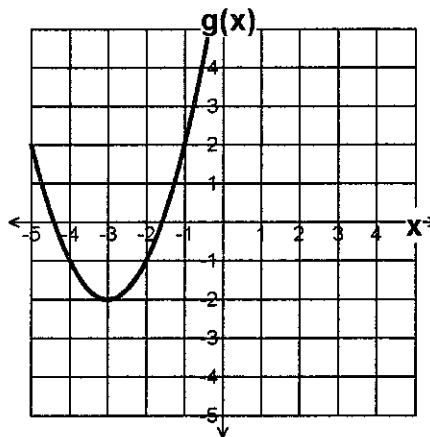
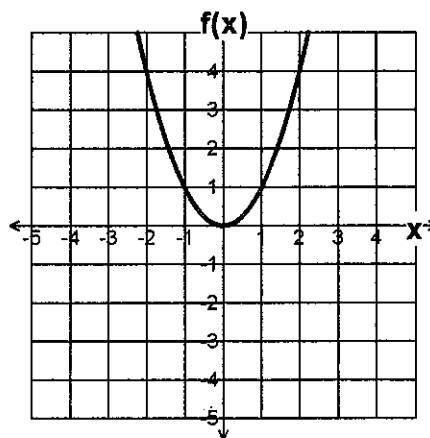
Name \_\_\_\_\_

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1. The figure above shows the graph of quadratic function  $f$  with vertex at  $(-2, 3)$ . If the parabola shown is reflected in the  $x$ -axis, what would be the image of the vertex after the reflection?

- a)  $(2, -3)$       b)  $(2, 3)$       c)  $(-2, -3)$   
 d)  $(3, -2)$       e)  $(3, 2)$

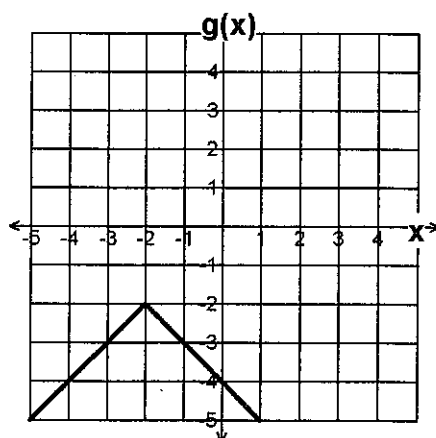
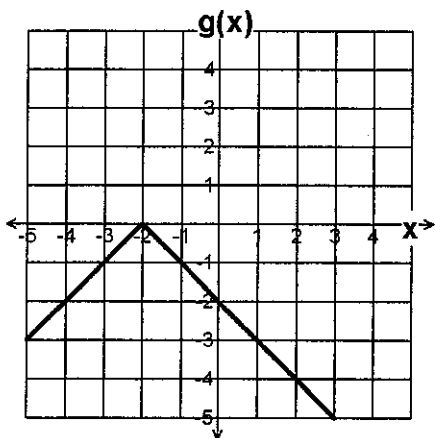
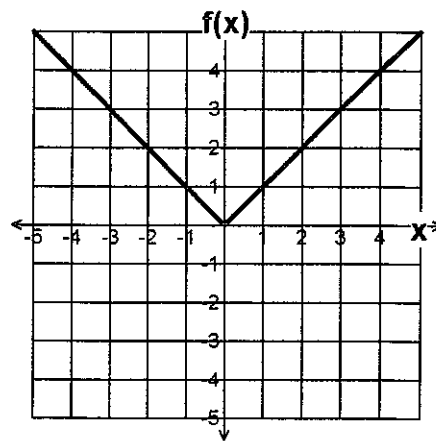
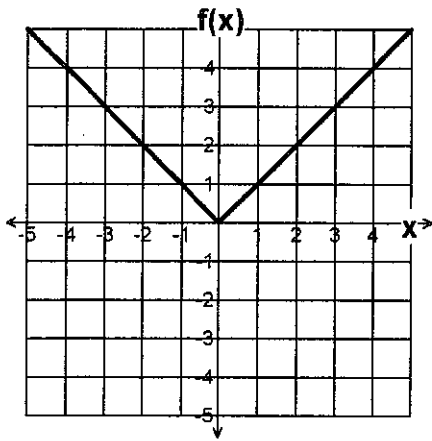


2. The figures above show the graphs of quadratic functions  $f$  and  $g$ . Which equation demonstrates the relationship between the two functions?

- a)  $g(x) = f(x + 3) - 2$       b)  $g(x) = f(x - 3) - 2$   
 c)  $g(x) = f(x + 3) + 2$       d)  $g(x) = 3f(x) - 2$   
 e) none of these

Name \_\_\_\_\_

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3. The figures above show the graphs of functions  $f$  and  $g$ . Which equation demonstrates the relationship between the two functions?

- a)  $g(x) = -f(x) + 2$
- b)  $g(x) = f(x + 2)$
- c)  $g(x) = -f(x + 2)$
- d)  $g(x) = -f(x) - 2$
- e)  $g(x) = -f(x + 2) - 2$

4. The figures above show the graphs of functions  $f$  and  $g$ . Which equation demonstrates the relationship between the two functions?

- a)  $g(x) = f(x + 2) - 2$
- b)  $g(x) = -f(x - 2) + 2$
- c)  $g(x) = f(x + 2) + 2$
- d)  $g(x) = -f(x) - 2$
- e)  $g(x) = -f(x + 2) - 2$

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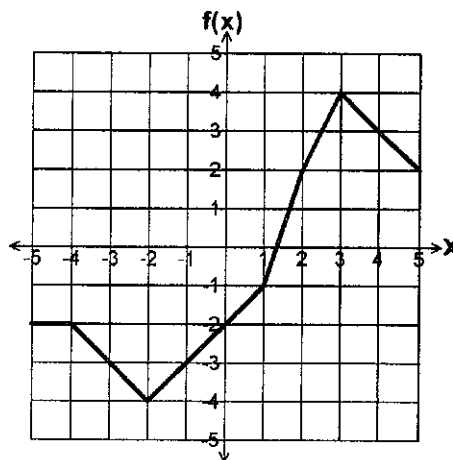
5. If  $f$  is a linear function with a slope of  $-2$  and a  $y$ -intercept of  $5$ , which expression represents function  $f$ ?

- a)  $f(x) = x + 1$
- b)  $f(x) = 2x - 5$
- c)  $f(x) = 2x - 3$
- d)  $f(x) = 2x + 3$
- e)  $f(x) = 5 - 2x$

6. What is the domain of the given function?

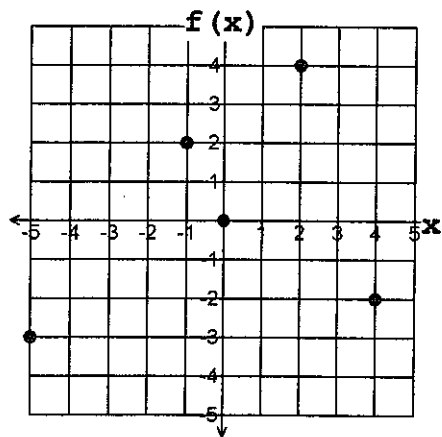
$\{(-2, 3), (-1, 1), (0, 0), (1, -1), (2, -3)\}$

- a)  $\{0, 1, 2\}$
- b)  $\{-2, -1, 0\}$
- c)  $\{-2, -1, 0, 1, 2\}$
- d)  $\{-2, -1, 1, 2\}$
- e) all real numbers



8. The figure above shows the graph of function  $f$ . What is the  $y$ -intercept of  $f$ ?

- a)  $-5$
- b)  $-2$
- c)  $0$
- d)  $1$
- e)  $4$

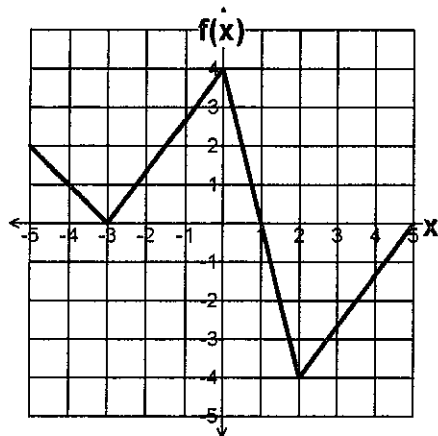


7. The figure above shows the graph of function  $f$ . What is the range of function  $f$ ?

- a)  $\{2, 4\}$
- b)  $\{0, 2, 4\}$
- c)  $\{-3, 0, 2, 4\}$
- d)  $\{-3, -2, 0, 2, 4\}$
- e) all real numbers

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9. Which of the following statements are true about function  $f$ , whose graph is shown above?

I.  $f$  is increasing for  $-5 \leq x \leq -3$ .

II.  $f$  has two zeros.

III.  $f$  is increasing for  $2 \leq x \leq 5$ .

a) I only

b) II only

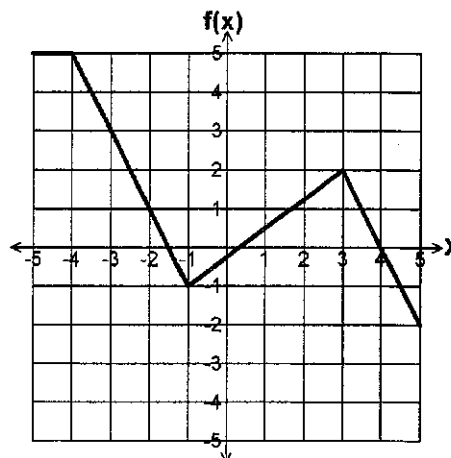
c) III only

d) I and II only

e) I, II and III

10. The figure above shows the graph of function  $f$ . What is the minimum value of  $f$ ?

a) -4    b) -3    c) 2    d) 4    e) 5



11. The graph of  $y = f(x)$  is shown above. If  $f(-3) = k$ , which of the following is the value of  $f(k)$ ?

a) -2    b) -1    c) 0    d) 1    e) 2

## Algebra 2 Practice Test 1: Transformations and Curve Fitting

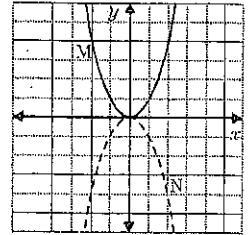
- \_\_\_\_\_ 1. (1 point) Compare the graph of  $g(x) = x^2 + 6$  with the graph of  $f(x) = x^2$ .
- The graph of  $g(x)$  is wider.
  - The graph of  $g(x)$  is narrower.
  - The graph of  $g(x)$  is translated 6 units down from the graph of  $f(x)$ .
  - The graph of  $g(x)$  is translated 6 units up from the graph of  $f(x)$ .
- \_\_\_\_\_ 2. (1 point) Which function's graph is the widest parabola?
- $y = \frac{1}{8}x^2$
  - $y = \frac{1}{3}x^2$
  - $y = 3x^2$
  - $y = 8x^2$
- \_\_\_\_\_ 3. (1 point) The points  $\{(-3, 2), (0, 1), (4, 5)\}$  are on the graph of function  $f$ . What are the coordinates of these three points after a vertical stretch by a factor of 3, followed by a reflection across the  $x$ -axis?
- $\{(-9, -2), (0, -1), (12, -5)\}$
  - $\{(-1, -2), (0, -1), (\frac{4}{3}, -5)\}$
  - $\{(-9, 2), (0, 1), (12, 5)\}$
  - $\{(-3, -6), (0, -3), (4, -15)\}$
- \_\_\_\_\_ 4. (1 point) Use this description to write the quadratic function in vertex form:  
The parent function  $f(x) = x^2$  is vertically stretched by a factor of 3 and translated 12 units right and 5 units up.
- $g(x) = \frac{1}{3}(x - 12)^2 + 5$
  - $g(x) = 3(x - 12)^2 - 5$
  - $g(x) = 3(x - 12)^2 + 5$
  - $g(x) = 3(x + 12)^2 + 5$
- \_\_\_\_\_ 5. (1 point) What is the transformation of the graph of  $f(x) = x^3$  that yields  $f(x) = 4(x - 2)^3 - 3$ ?
- vertical stretch of 4, shift 2 units right and 3 units up
  - vertical stretch of 4, shift 2 units left and 3 units up
  - vertical stretch of 4, shift 2 units right and 3 units down
  - vertical stretch of 4, shift 2 units left and 3 units down
- \_\_\_\_\_ 6. (1 point) Which transformation from the graph of a function  $f(x)$  describes the graph of  $f(x) = \sqrt{x - 3}$ ?
- horizontal shift right 3 units
  - horizontal shift left 3 units
  - vertical shift up 3 units
  - vertical shift down 3 units
- \_\_\_\_\_ 7. (1 point) Describe the effect of the transformation  $(x, y) \rightarrow (x + 9, y)$ .
- vertical translation of 9 units
  - vertical stretch with reflection
  - horizontal translation of 9 units
  - vertical stretch without reflection
- \_\_\_\_\_ 8. (1 point) Let  $f(x) = \sqrt{x}$ . Write a function  $g$  that reflects  $f(x)$  across the  $y$ -axis.
- $g(x) = -\sqrt{x}$
  - $g(x) = \sqrt{-x}$
  - $g(x) = -\sqrt{-x}$
  - $g(x) = \sqrt{x - 1}$

MATH 11

Practice TRANSFORMATIONS 2006

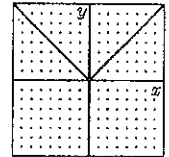
1. Given the equation for graph M is  $y = x^2$ , what is the equation for graph N?

- a.  $y = -x^2$     b.  $y = -\sqrt{x}$     c.  $y = \sqrt{x}$     d.  $x = -y^2$     e.  $x = y^2$



2. Classify the function shown.

- a. Absolute Value Function                      b. Quadratic Function  
 c. Cubic Function                                      d. Square Root Function  
 e. Exponential Function



3. Consider the graph of  $y = \sqrt{x}$ . If it is translated 5 units to the left and slid 7 units up, what would be the resulting equation?

- a.  $y = \sqrt{x-5} + 7$                       b.  $y = \sqrt{x-5} - 7$                       c.  $y = -\sqrt{x} + 7$   
 d.  $y = \sqrt{x+5} + 7$                       e.  $y = (\sqrt{x} + 5) + 7$

4. Identify the vertex

$$y = x^2 - 8x + 11$$