Name _____ Date _____ Class_____

LESSON 1-3

Transformations of Function Graphs

Practice and Problem Solving: A/B

Let $g(x)$ be the transformation of $f(x)$. Write the rule for $g(x)$ using the change described.

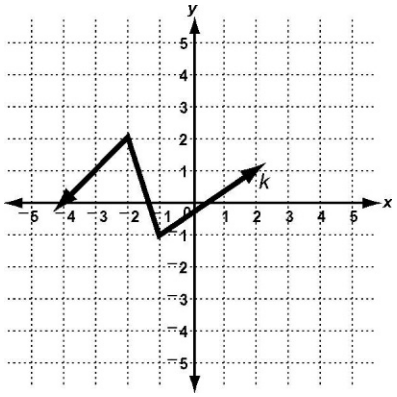
1. reflection across the y-axis followed by a vertical shift 3 units up _____

2. horizontal stretch by a factor of 5 followed by a horizontal shift right 2 units _____

3. vertical compression by a factor of $\frac{1}{8}$ followed by a vertical shift down 6 units _____

4. reflection across the x-axis followed by a vertical stretch by a factor of 2, a horizontal shift 7 units left, and a vertical shift 5 units down _____

Use the graph to perform each transformation.



5. Transform $y = k(x)$ by compressing it horizontally by a factor of $\frac{1}{2}$. Label the new function $m(x)$. Which coordinate is multiplied by $\frac{1}{2}$?

_____

6. Transform $y = k(x)$ by translating it down 3 units. Label the new function $p(x)$. What happens to the y-coordinate in each new ordered pair?

_____

7. Transform $y = k(x)$ by stretching it vertically by a factor of 2. Label the new function $q(x)$. Which coordinate is multiplied by 2?

LESSON 1-3

Transformations of Function Graphs

Practice and Problem Solving: Modified

Describe the change, $g(x)$, in terms of $f(x)$ for the transformation described. Example: g(x) = af(x - h) + k.

8. vertical translation 8 units down _____

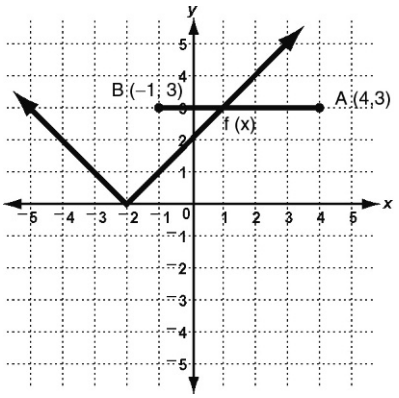
9. horizontal stretch by a factor of 4 _____

10. vertical compression by a factor of $\frac{1}{4}$ _____

11. horizontal translation 5 units left _____

12. reflection across the y-axis _____

Use the graph to perform each transformation.



13. Plot point A at (4, 3). Translate point A left 5 units. Label this point B.

    Give the coordinates (x, y) of point B. _____

14. Plot point C at (1, 1). Translate point C right 2 units and down 3 units. Label this point D. Give the coordinates (x, y) of point D.

    _____

15. Transform $y = f(x)$ by translating it right 2 units. Label the new function $g(x)$. Compare the coordinates of the corresponding points that make up the 2 functions. Which coordinate changes, x or y?

    _____

16. Transform $y = f(x)$ by reflecting it across the x-axis. Label the new function $h(x)$. Compare the coordinates of the corresponding points that make up the two functions. Which coordinate changes, x or y?

    _____