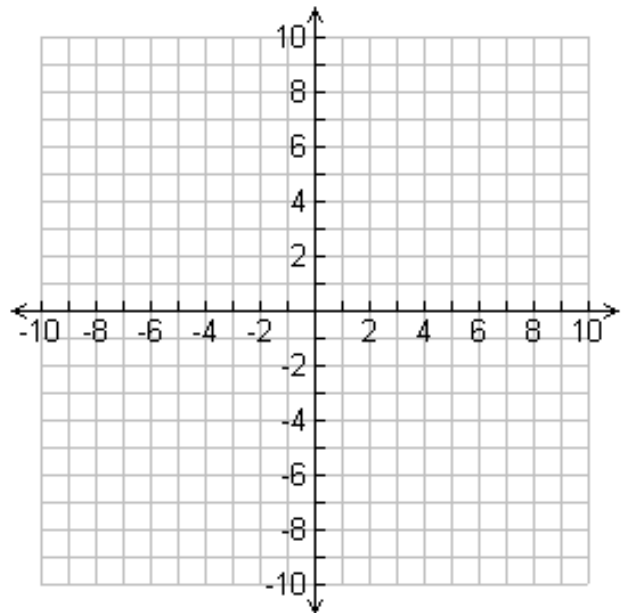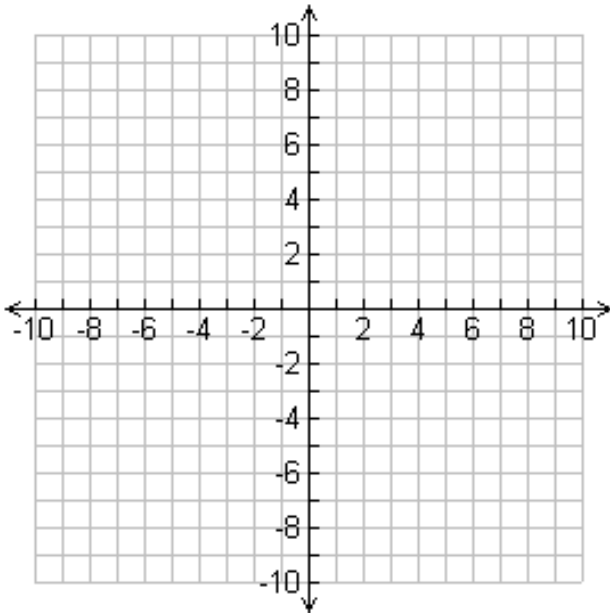# P.S. #12.3 - Horizontal Compressions and Review

Name: _____ Class: _____

Graph the following functions using your knowledge of parent functions and transformations of functions.
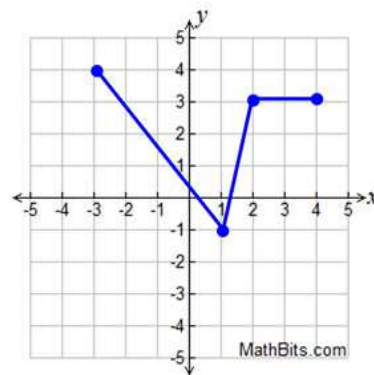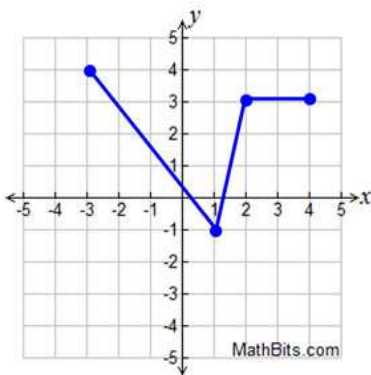
1.) $f(x) = \sqrt{2x}$

2.) $g(x) = \left| \frac{1}{3}x \right|$

3.) The following graph represents $f(x)$. Please complete the following transformations.

a.) $g(x) = f(2x)$ Describe: _____

b.) $q(x) = f\left(\frac{1}{2}x\right)$ Describe: _____

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4.) Suppose the graph of f is given. Write an equation for each of the following graphs after the graph of f has been transformed as described.

a. Translate 5 units upward.   _____

b. Translate 3 units downward.   _____

c. Translate 2 units right.   _____

d. Translate 4 units left.   _____

e. Reflect about the x-axis.   _____

f. Reflect about the y-axis.   _____

g. Stretch vertically by a factor of 2.   _____

h. Shrink vertically by a factor of $\frac{1}{3}$.   _____

i. Shrink horizontally by a factor of $\frac{1}{3}$.   _____

j. Stretch horizontally by a factor of 2.   _____

5.) The graph of the equation $y = f(x)$ is provided. For each of the following transformations of the graph, write a formula (in terms of f) for the function that is represented by the transformation of the graph of $y = f(x)$. Then draw the transformed graph of the function on the same set of axes as the graph of $y = f(x)$.
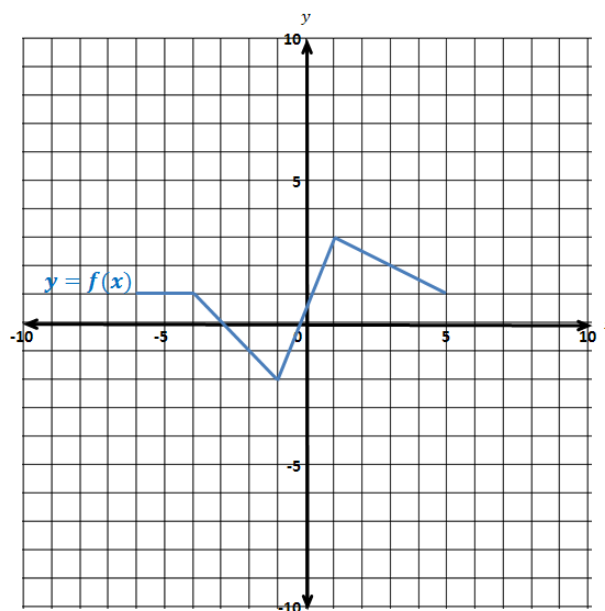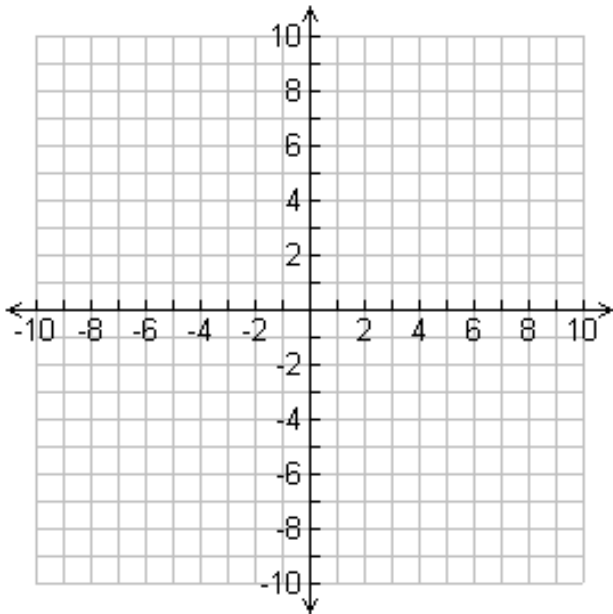
a. A translation 3 units left and 2 units up.
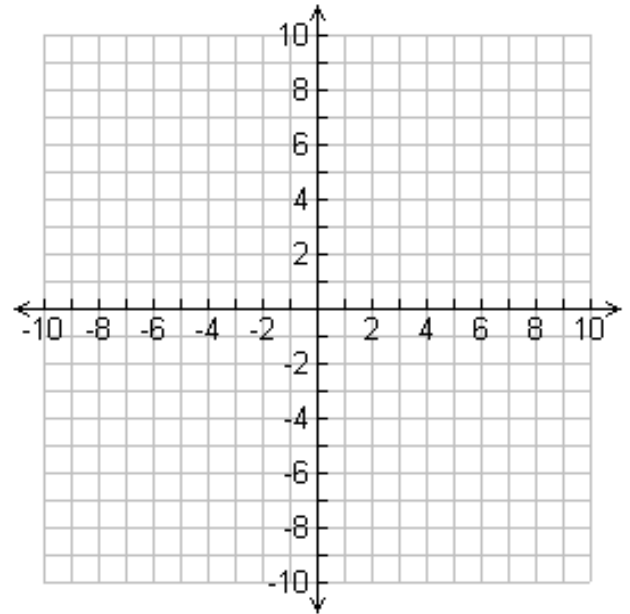
b. A vertical stretch by a scale factor of 3.

c. A horizontal shrink by a scale factor of $\frac{1}{2}$.

For 6 – 9, transform the following functions using your knowledge of parent functions and transformations.
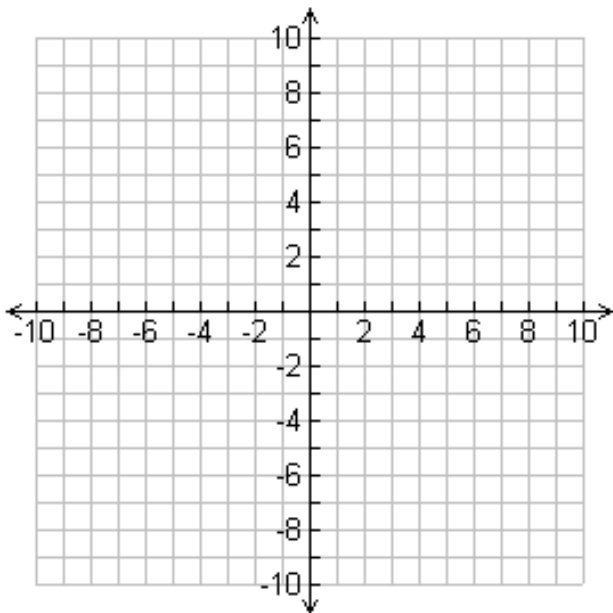
6.) $f(x) = \sqrt{x-5} + 1$

7.) $g(x) = 2(x-3)^2 + 1$

8.) $f(x) = |2x| + 1$

9.) $g(x) = 3^{\frac{1}{2}x}$