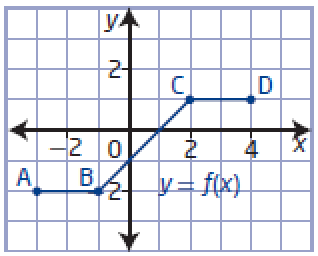
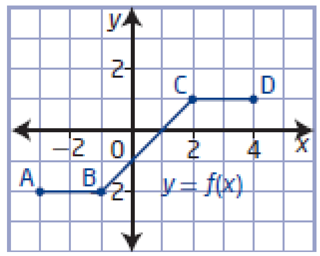
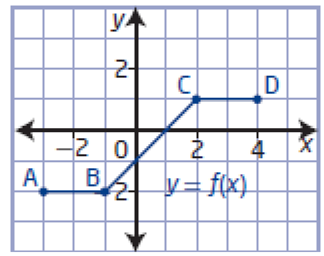
Chapter 1: Outcome 30.7/8 Review

Level 2

1. Given the graph of the function $y = f(x)$, sketch the graph of each transformed function.

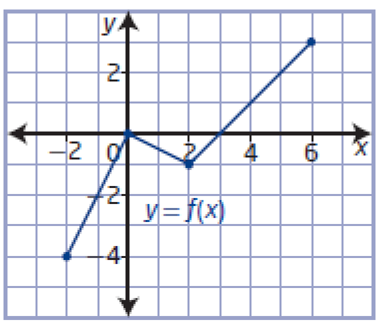


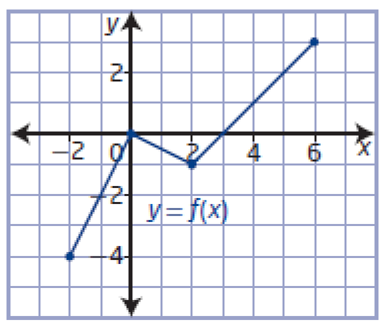


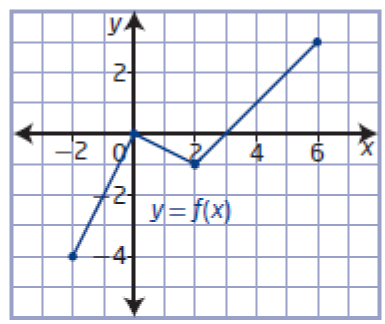


a) $y = f(x) + 3$ **b)** $h(x) = f(x + 1)$ **c)** $y = f(x - 2) - 1$

2. Using the graph below, graph each transformed function







a) $y = f(-x)$ b) $y = \frac{1}{2} f(x)$ c) $y = f(2x)$

3. Describe the transformation that can be applied to the graph of $f(x)$ to obtain the graph of the transformed function. State the values of a, b, h and k in $y = a f(b(x - h)) + k$

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

b) $y = f(3x) - 5$

c) $y = -f(x + 2)$

d) $y = 4f(-x)$

e) y = - 2 $f(x)$

f) y = f(4(x-3))

g) y = 5 f(-2x) + 4

4. Determine the equation of the inverse of each function below algebraically.

a) $f(x) = 3x - 6$

b) $f(x) = \frac{1}{3}(x + 12)$

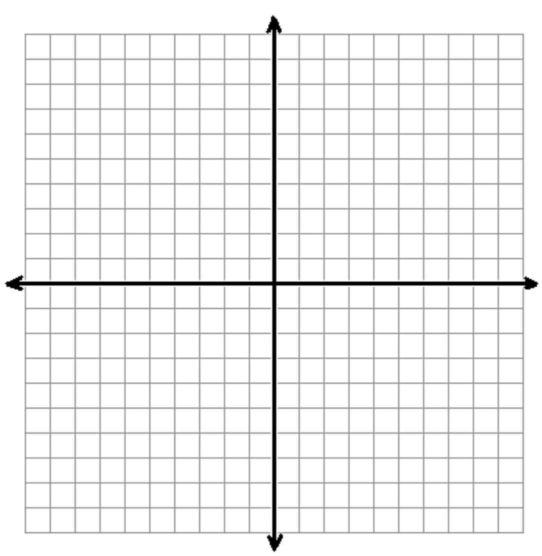
c) $f(x) = x^2 - 7$

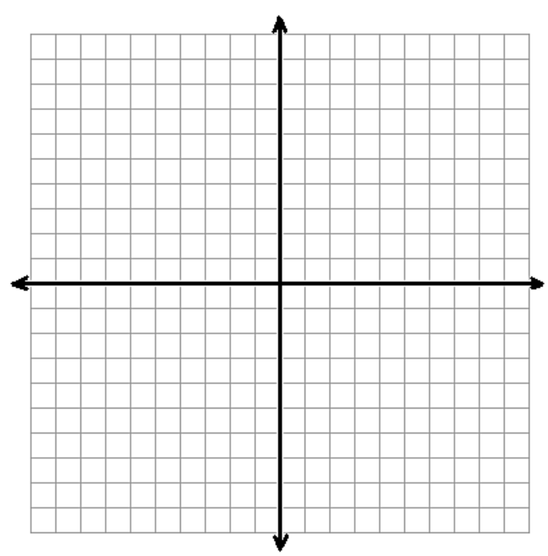
d) $y = (x - 5)^2 - 9$

5. Graph each function and its inverse on the same grid.

a) $y = x^2$

b) $y = |\ x\ |$



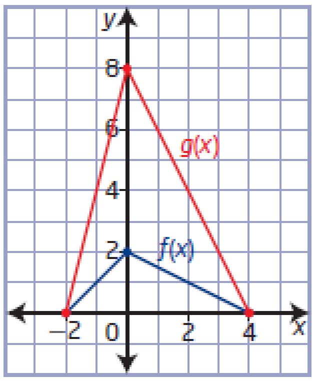


Level 3

6. For each function pair below, state how f(x) was transformed to create g(x) in the form of

g(x) = af(b(x-h)+k

a)



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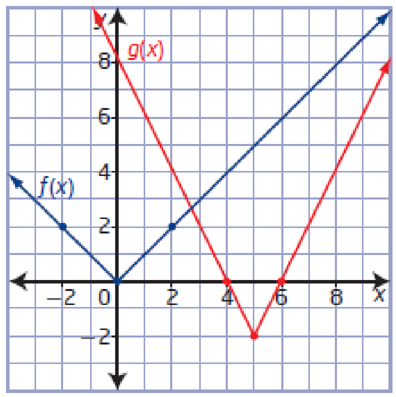
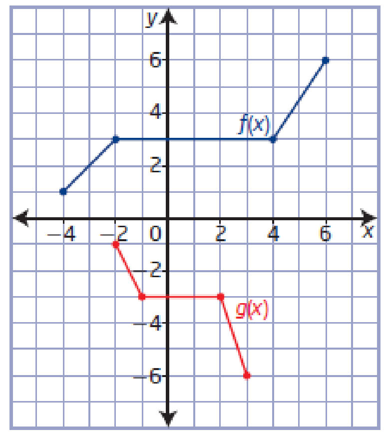


c)



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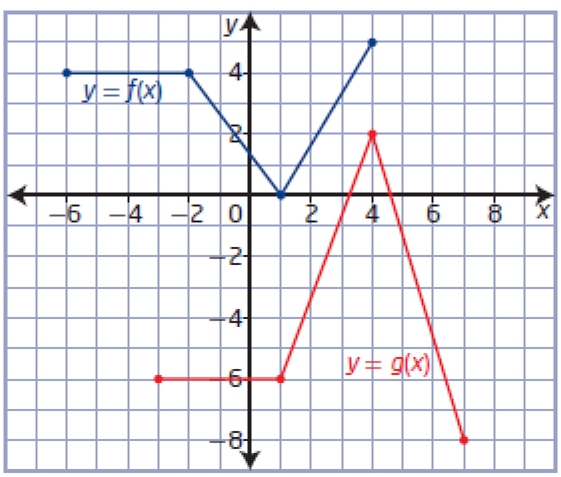

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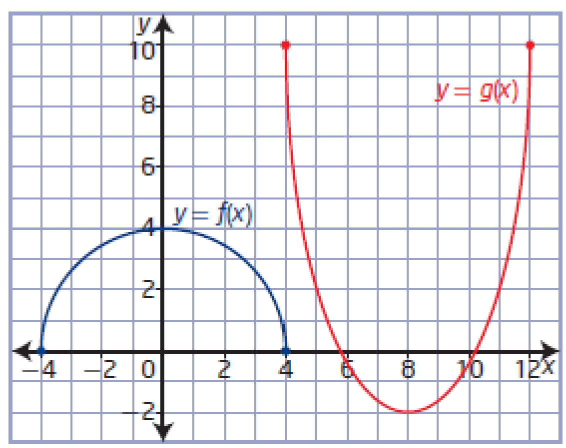


7. Write the equation for each transformation of $y = x^2$ in the form $y = af(b(x - h)) + k$.

a) a vertical stretch by a factor of 3, reflected in the *y*-axis, and translated 3 units left and 2 units down

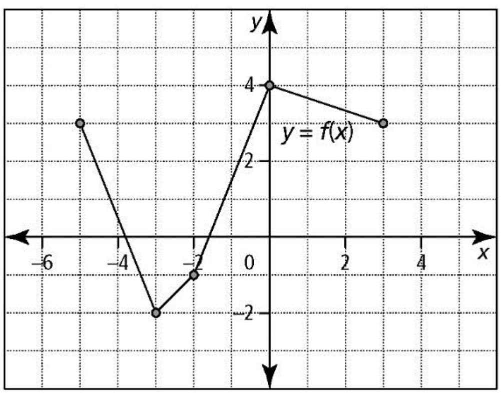
b) a horizontal stretch by a factor of 2, reflected in the *x*-axis, and translated 7 units up

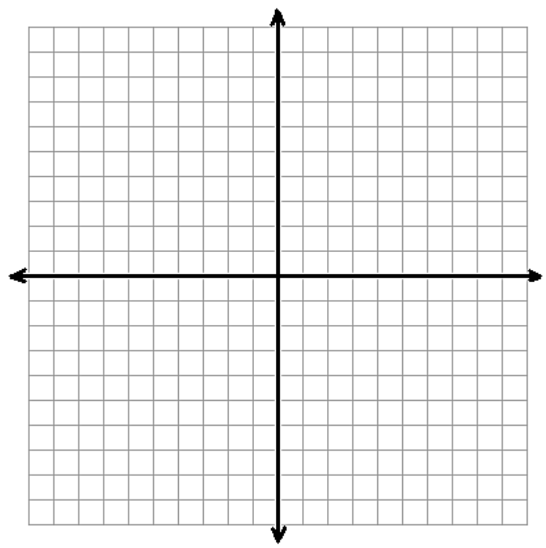
c) a horizontal stretch by a factor of $\frac{1}{4}$, translated 5 units right and 1 unit down

d) a vertical stretch by a factor of $\frac{1}{3}$, a horizontal stretch by a factor of $\frac{1}{2}$, and reflected in the *x*-axis

8. Here is the graph of y=f(x).

a) On the coordinate plane provided, sketch and label its image after a vertical stretch by a factor of 3, and a translation of 4 units left and 2 units down.





b) Write the equation of the transformed image in the form **y = a f(b(x-h))+k.**

9. If the *x*-intercept of the graph of $y = f(x)$ is $(a, 0)$ and the *y*-intercept is $(0, b)$, determine the *x*-intercept and *y*-intercept after the following transformations of the graph.

a) $y = 3f(x - 7) + 2$

b) $y = f(-0.25x) - 7$

c) $y + 3 = 4f(x + 10)$

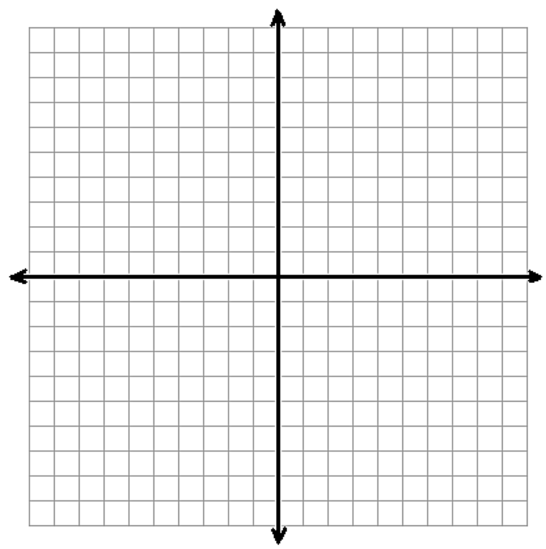
d) $y = -f(2x) - 6$

Level 4.

10. Determine the equation of the inverse of each function below.

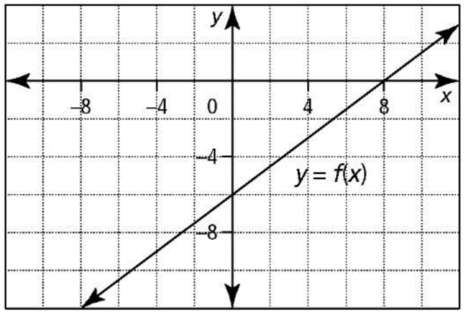
a) $f(x) = -6x + 5$ b) $f(x) = \frac{x-3}{8}$ c) $f(x) = (x-1)^2 - 2$

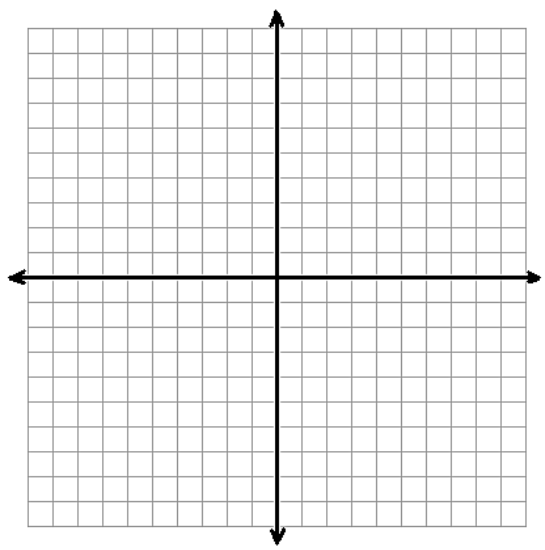
11. Using $f(x) = x^2$, graphing $y = -4\,f\,(2x - 6) + 3$



12. Copy each graph of $y = f(x)$. Then, sketch the graph of its inverse, $x = f(y)$. Determine whether the inverse is a function. If the inverse is not a function, restrict the domain of f(x) so $f(x)^{-1}$ is a function

a)





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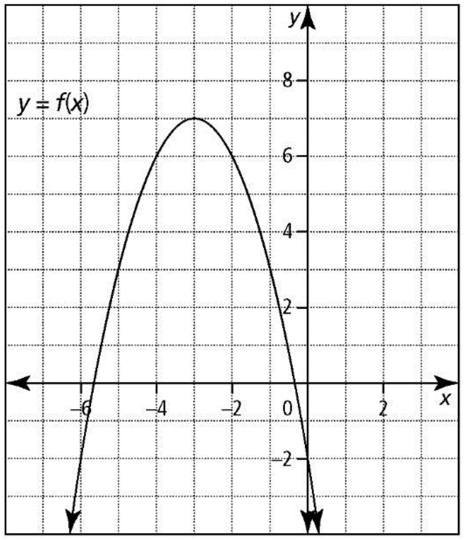

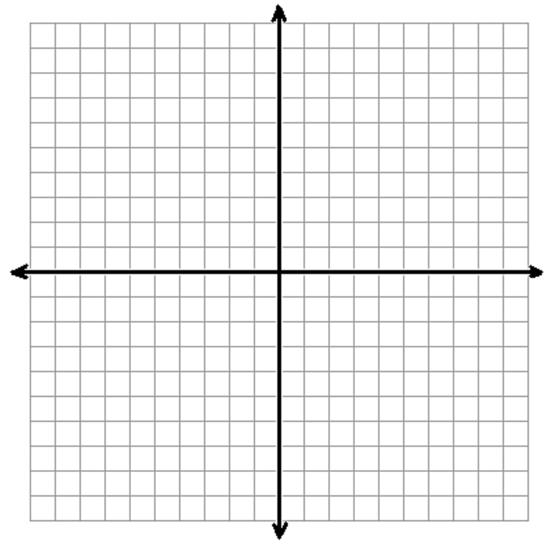

c)