Precalculus   Name_____
Section 1.7A Transformations   Period_____Date_____

Describe how the graph of $y = x^2$ can be transformed to the graph of the given equation.

1. $y = (x + 50)^2 - 279$	2. $y = (100 - x)^2$
3. $y = -x^2 + 5.2$	4. $y = -(3 - x)^2$

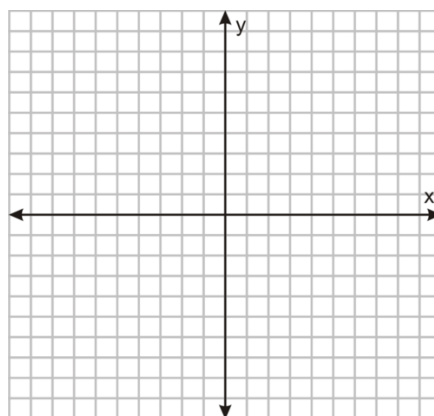**Describe how to transform the graph of f into the graph of g.**

5. $f(x) = \sqrt{x + 2}$ and $g(x) = \sqrt{x - 4}$	6. $f(x) = -|x - 3|$ and $g(x) = |x - 3|$
7. $f(x) = (x - 2)^3$ and $g(x) = -(x + 2)^3$	8. $f(x) = \dfrac{1}{x}$ and $g(x) = \dfrac{1}{x} + 5$

Find the equation of the reflection of f across (a) the x-axis and (b) the y-axis.

9. $f(x) = x^3 - 5x^2 - 3x + 2$	10. $f(x) = 2\sqrt{x + 3} - 4$
11. $f(x) = \sqrt[3]{7x}$	12. $f(x) = 3|x + 5|$

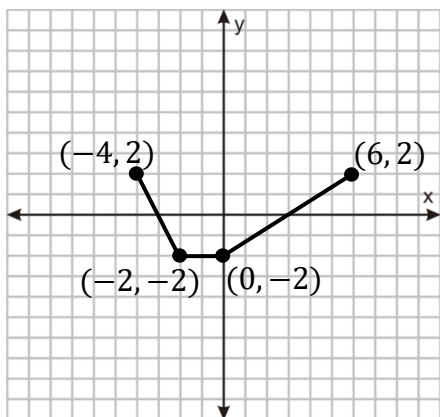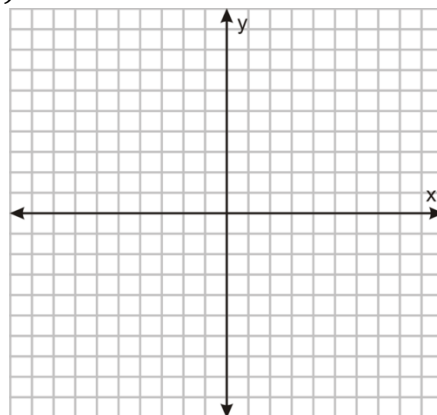**Sketch the graphs of the function when $c = -2, -1, 1,$ and 2 on the same set of coordinate axes.**

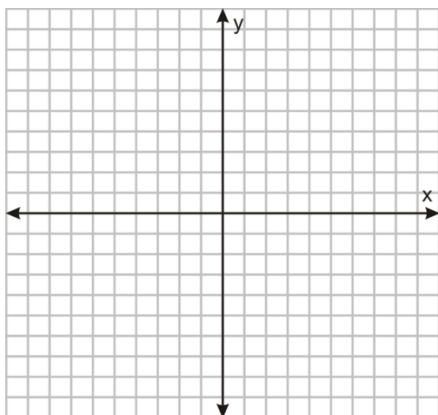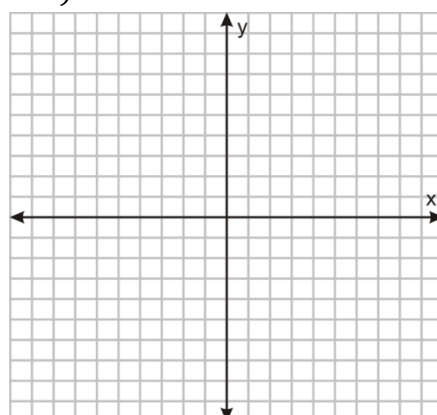| |
|---|
| 13. $f(x) = |x - c|$ |

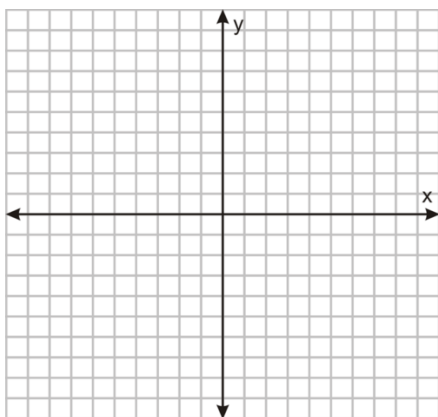Use the graph of f to sketch each graph.

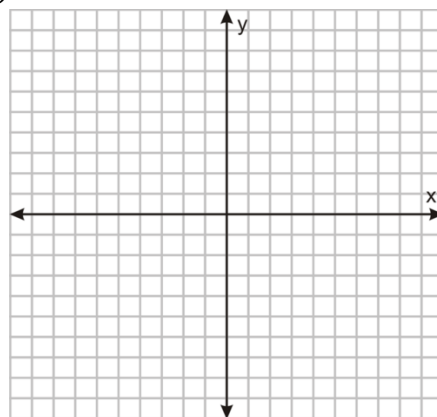|	14. $y = f(-x)$
$f(x)$ $(-4,2)$ $(6,2)$ $(-2,-2)$ $(0,-2)$	
15. $y = f(x) + 4$	16. $y = -f(x-4)$
17. $y = f(x) - 3$	18. $y = -f(x) - 1$

Write an equation for the function whose graph is described.

| 19. The shape of $f(x) = x^2$, but shifted two units to the left, nine units up, and then reflected in the x-axis	20. The shape of $f(x) = x^3$, but shifted six units to the left, six units down, and then reflected in the y-axis
21. The shape of $f(x) = |x|$, but shifted four units to the left and eight units down	22. The shape of $f(x) = \sqrt{x}$, but shifted nine units down and then reflected in both the x-axis and y-axis

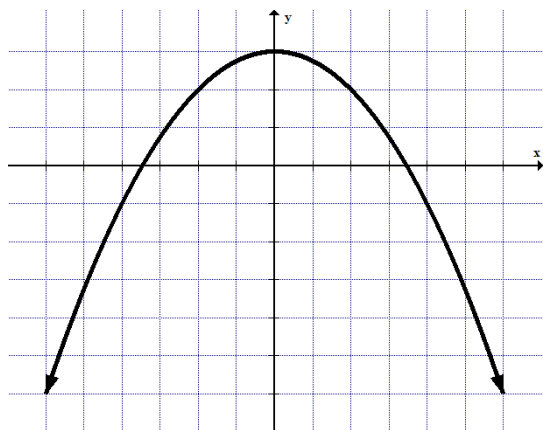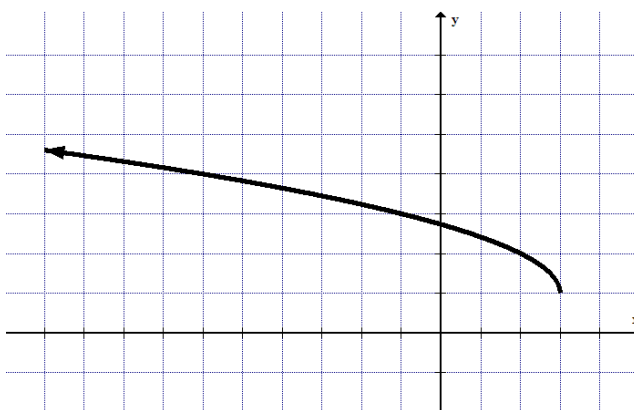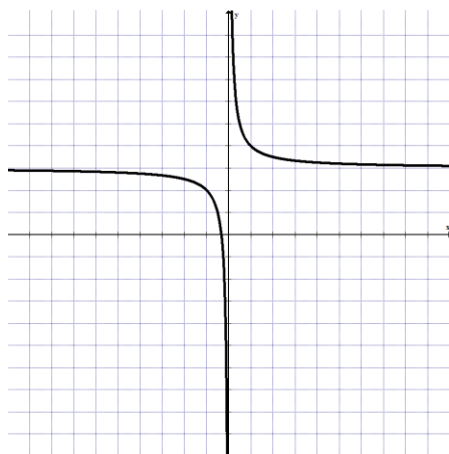Write the equation for the function represented by each graph.
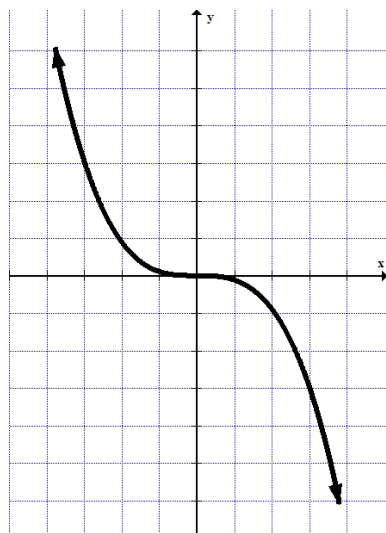
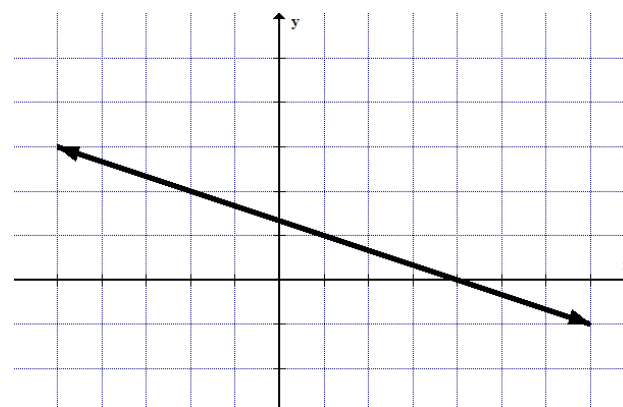| 23.	24.
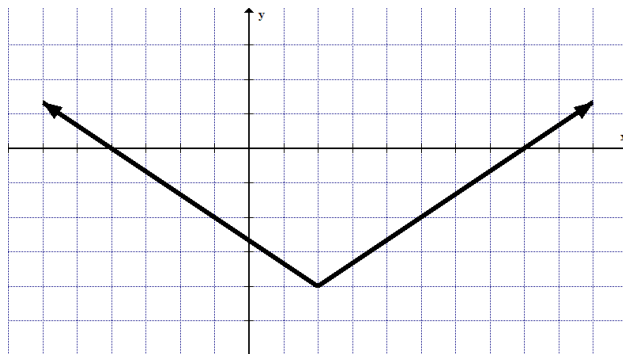
25.	26.

27.	28.

29. Given: $f(x) = \sqrt[3]{x}$

Write the transformation in 2 different ways to create the new function $g(x)$ when $f(x)$ is:

a) shifted right 1

b) reflected in the y-axis and shifted up 5

c) shifted down 9

d) reflected in the x-axis and left 7

30. Graph: $h(x) = -f(x-1) + 3$

$f(x)$