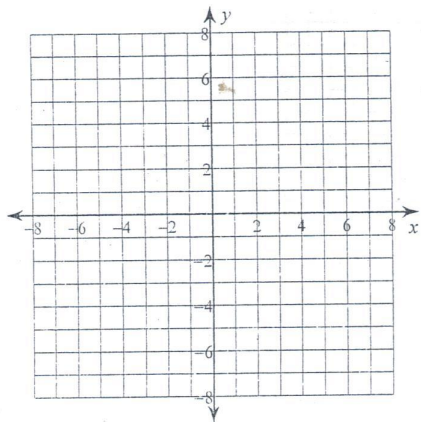


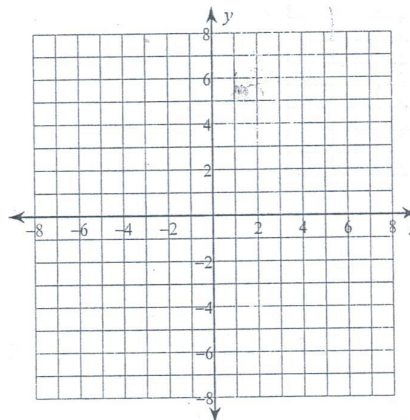
Families of Functions Review

Graph each equation. Describe ALL transformations.

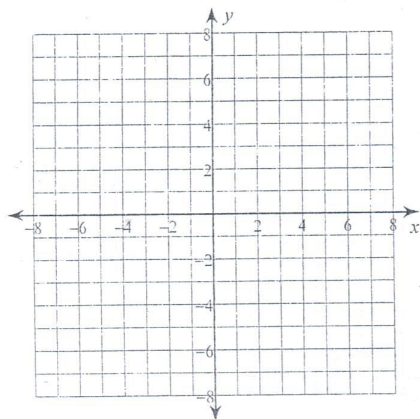
1) $y = -(x + 2)^2 + 3$



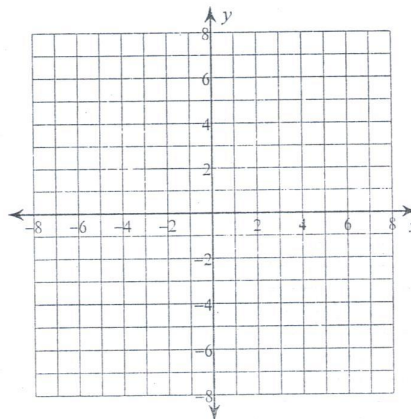
2) $y = -\frac{1}{4}(x + 3)^2 + 1$



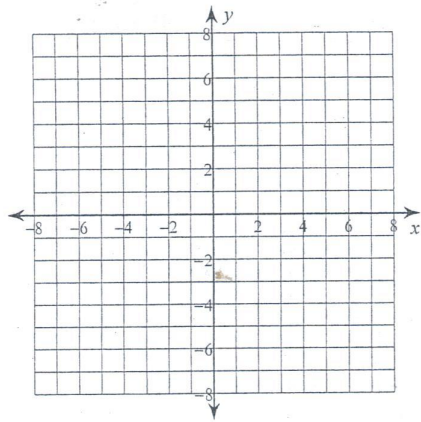
3) $y = 3\sqrt{x - 3}$



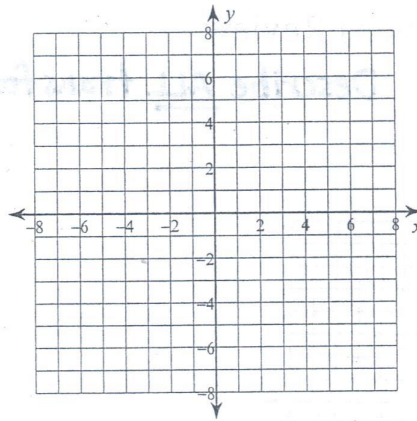
4) $y = 2\sqrt{x} - 4$



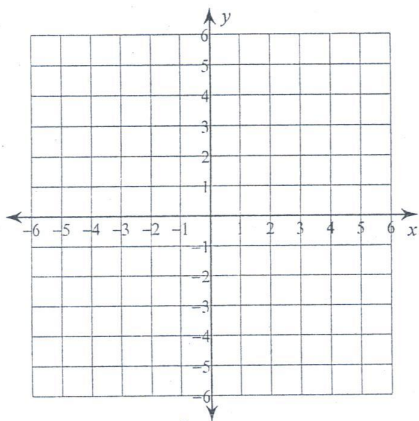
$$5) y = 3\sqrt[3]{x-2} + 1$$



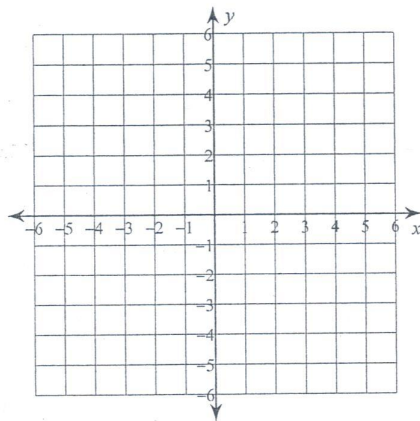
$$6) y = \sqrt[3]{x+2} - 2$$



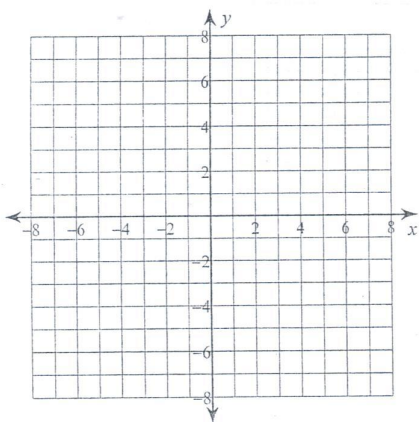
$$7) y = 3|x+4| + 1$$



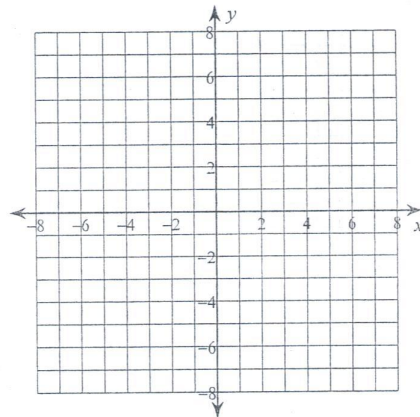
$$8) y = 2|x| + 1$$



$$9) y = \frac{1}{2}(x+4)^3 + 4$$



$$10) y = -(x-1)^3 - 5$$



Absolute Value Equations (5-5)

Graph each equation and describe the transformations.

$$11) y = |x-2| + 7$$

$$12) y = -\frac{1}{2}|x|$$

$$13) y = |x+3| - 2$$

$$14) y = 3|x-4|$$

Radical Equations (4-2)

Graph each equation and describe the transformations.

$$15) y = -\sqrt{x+1}$$

$$16) y = 2\sqrt{x-1} + 2$$

$$17) y = -\sqrt[3]{x+3} - 1$$

$$18) y = \frac{1}{2}\sqrt[3]{x} + 3$$

Rewrite the function to make it easy to graph using transformations. Describe the graph.

$$19) y = \sqrt{16x-32}$$

$$20) y = \sqrt{9x-63} + 4$$

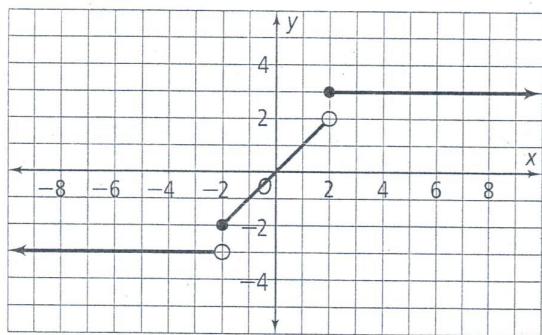
$$21) y = \sqrt[3]{8x} + 3$$

$$22) y = \sqrt[3]{27x+54} - 5$$

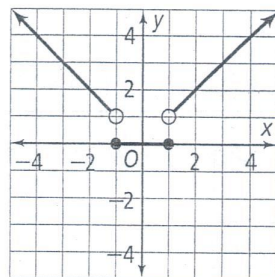
Piecewise Functions (4-3)

Write the piecewise function that is represented by the graph.

23)



24)



Graph each piecewise function:

$$25) f(x) = \begin{cases} 2x-2 & \text{for } x < 2 \\ \frac{1}{2}x+1 & \text{for } x \geq 2 \end{cases}$$

$$26) f(x) = \begin{cases} 2x+5 & \text{for } x < 0 \\ -\frac{1}{2}x^2 & \text{for } x \geq 0 \end{cases}$$

Review of Solving Quadratic Equations

Solve each equation by taking square roots.

27)
1) $3x^2 + 5 = -8$

Solve each equation by factoring.

28)
2) $x^2 + 9x + 8 = 0$

Solve each equation by completing the square.

29)
3) $m^2 + 14m - 98 = -5$

Find the discriminant of each quadratic equation then state the number and type of solutions.

30)
4) $9m^2 - 5m + 2 = 0$

Solve each equation with the quadratic formula.

31)
5) $3x^2 + 10x + 7 = 0$

Combining Functions Review

Date _____ Period _____

Perform the indicated operation.

1) $f(x) = -3x + 3$
 $g(x) = -3x - 5$
Find $(f + g)(x)$

2) $g(t) = 3t - 2$
 $f(t) = 4t - 3$
Find $(g + f)(t)$

3) $g(n) = n + 5$
 $h(n) = 4n + 3$
Find $(g - h)(n)$

4) $h(n) = -4n + 1$
 $g(n) = n + 2$
Find $(h - g)(5)$

5) $f(x) = -2x - 5$
 $g(x) = 4x - 2$
Find $(f - g)(1)$

6) $f(t) = 4t + 1$
 $g(t) = 3t + 5$
Find $(f + g)(-1)$

7) $f(x) = 3x + 1$
 $g(x) = -2x - 4$
Find $(f \cdot g)(x)$

8) $h(x) = x + 3$
 $g(x) = 4x + 2$
Find $\left(\frac{h}{g}\right)(x)$

9) $g(n) = 2n + 2$
 $h(n) = 3n + 4$
Find $(g \cdot h)(-1)$

10) $h(n) = n + 3$
 $g(n) = 2n + 2$
Find $\left(\frac{h}{g}\right)(3)$.