

Function Notation Review

Date _____ Period _____

If $f(x) = 2x - 7$ and $g(x) = x^2 - 1$, find each of the following:

1) $g(-1)$

2) $(f + g)(x)$

3) $(f \circ g)(x)$

4) $g(g(x))$

5) $f(x) - g(x)$

6) $(g - f)(3)$

7) $g(f(-2))$

8) $(f + g)(5)$

9) $(f \cdot g)(x)$

10) $(g \circ g)(2)$

Given the piecewise function, $f(x) = \begin{cases} (x + 3)^2 + 2, & x \leq -2 \\ -|x - 2| + 3, & x > -2 \end{cases}$, find the following:

11) $f(-2)$

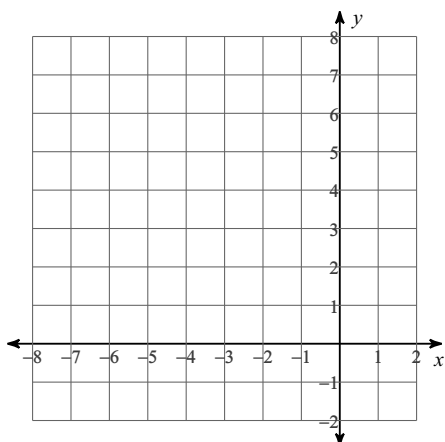
12) $f(12)$

13) $f(-5)$

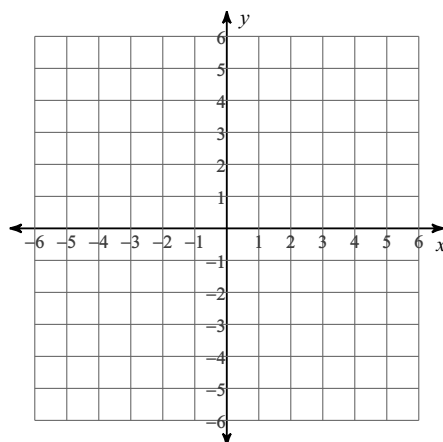
14) $f(0)$

Graph each function. State the VERTEX, DOMAIN and RANGE.

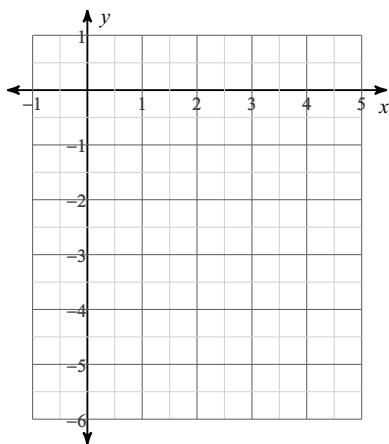
15) $y = 2(x + 3)^2 - 1$



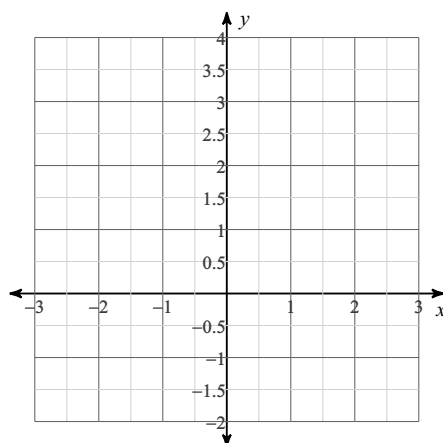
16) $y = |x + 1| - 3$



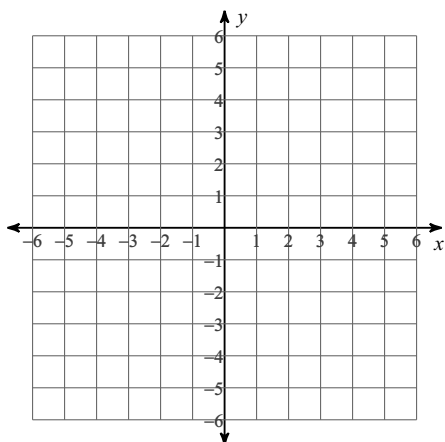
17) $y = -\frac{1}{2}(x - 2)^2 - 2$



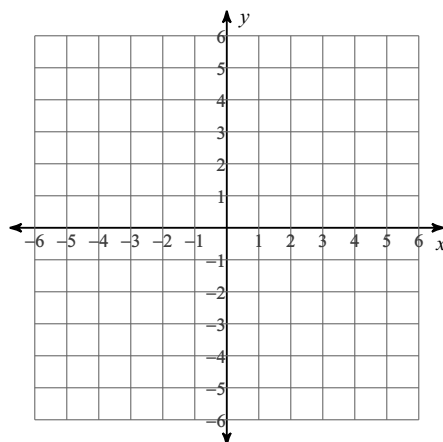
18) $y = (x - 1)^2 - 1$



19) $y = -2|x + 2| + 4$



20) $y = 3|x + 4| - 4$



Without graphing, state the SHAPE and describe the TRANSFORMATION(S) of the following functions.

21) $y = -|x - 4| + 3$

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

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

24) $y = 3|x| + 1$

Write the equation for the following functions.

25) A quadratic function that is transformed 2 units to the right and 4 units down.

26) An absolute value function that is transformed 3 units to the left and 1 unit up.

27) A quadratic function that is transformed 2 units to the left and stretched by 3.

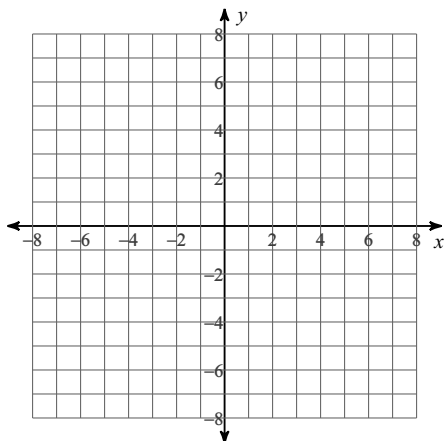
28) A quadratic function that is flipped across the x -axis, compressed vertically by $\frac{1}{4}$, and transformed 5 units left, and 2 units down.

29) A absolute value function that is transformed 2 units up.

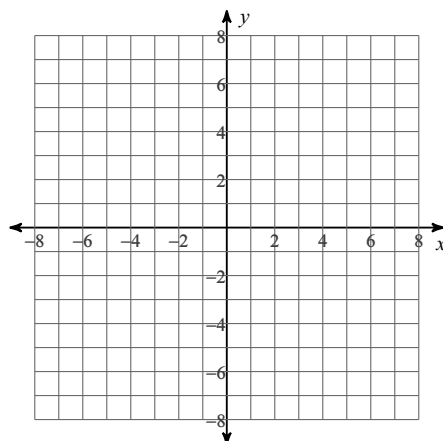
30) A absolute value function that is stretched by 5, and transformed 3 units down and 2 units right.

Graph each piecewise function.

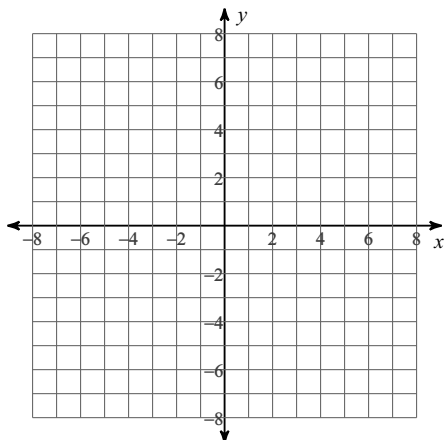
$$31) f(x) = \begin{cases} x + 1, & x < 0 \\ 2x + 3, & x \geq 0 \end{cases}$$



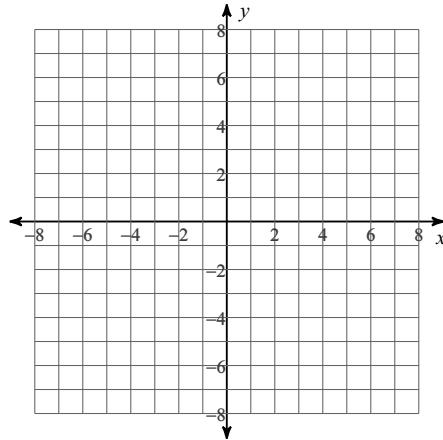
$$32) f(x) = \begin{cases} \frac{1}{2}x - 2, & x \leq -2 \\ x + 6, & x > -2 \end{cases}$$



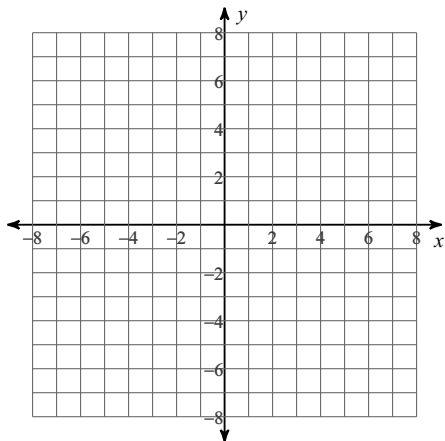
$$33) f(x) = \begin{cases} 2x - 1, & x \leq 1 \\ (x - 3)^2, & x > 1 \end{cases}$$



$$34) f(x) = \begin{cases} 3x - 2, & x < 0 \\ |x - 1| + 2, & x \geq 0 \end{cases}$$



$$35) f(x) = \begin{cases} (x + 3)^2 + 2, & x \leq -2 \\ -|x - 2| + 3, & x > -2 \end{cases}$$



$$36) f(x) = \begin{cases} \frac{1}{2} \cdot |x + 2| - 3, & x \leq 0 \\ -2(x - 1)^2 + 2, & x > 0 \end{cases}$$

