

2.6 - 2.8 Quiz REVIEW

Key

2G Piecewise functions

Evaluate the piecewise functions for each given value.

1. $f(x) = \begin{cases} 5, & \text{if } x \leq -6 \\ -9, & \text{if } -6 < x < 6 \\ 0, & \text{if } x \geq 6 \end{cases}$

a. $f(0) = -9$

b. $f(6) = 0$

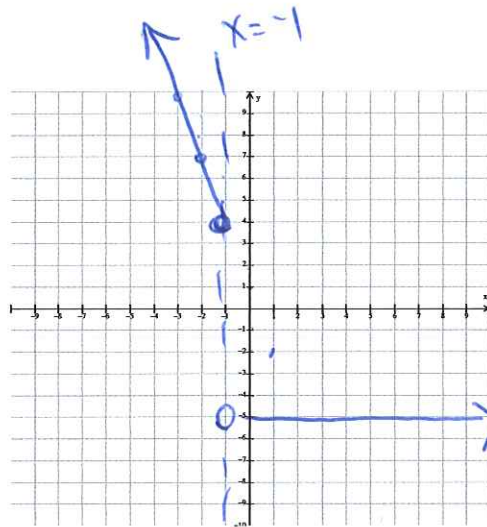
2. $f(x) = \begin{cases} -3x + 2, & \text{if } x < -2 \\ x + 5, & \text{if } -2 \leq x \leq 5 \\ |x - 17|, & \text{if } x > 5 \end{cases}$

a. $f(9) = |9 - 17| = |-8| = 8$

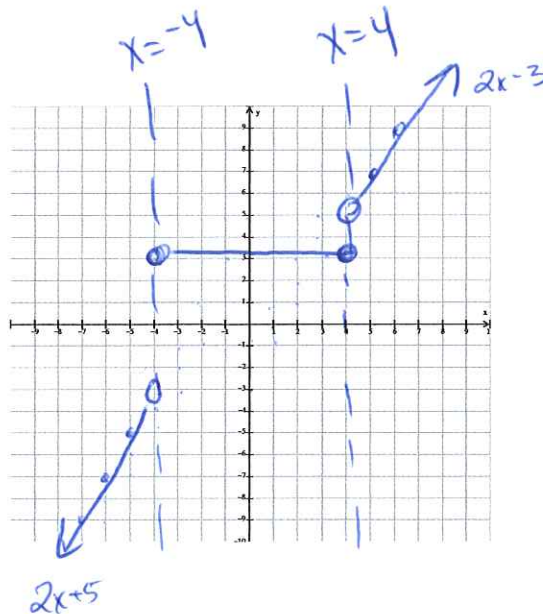
b. $f(-4) = -3(-4) + 2 = 14$

Graph the following piecewise functions.

3. $f(x) = \begin{cases} -5, & \text{if } x > -1 \\ -3x + 1, & \text{if } x \leq -1 \end{cases}$

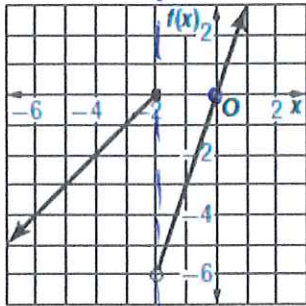


4. $f(x) = \begin{cases} 2x + 5, & \text{if } x < -4 \\ 3, & \text{if } -4 \leq x \leq 4 \\ 2x - 3, & \text{if } x > 4 \end{cases}$



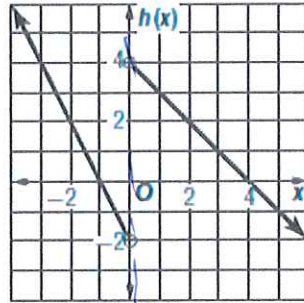
Write a piecewise function for each graph.

5.



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

6.



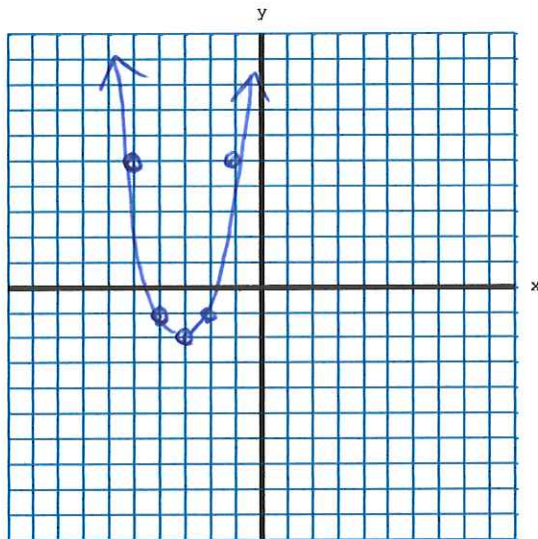
$$f(x) = \begin{cases} -x+4, & \text{if } x > 0 \\ -2x-2, & \text{if } x < 0 \end{cases}$$

* look for slope & y-intercept
 or * use 2 points & stat edit line reg in calculator

2H Transformations

Use the indicated transformations to graph the following quadratic functions:

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



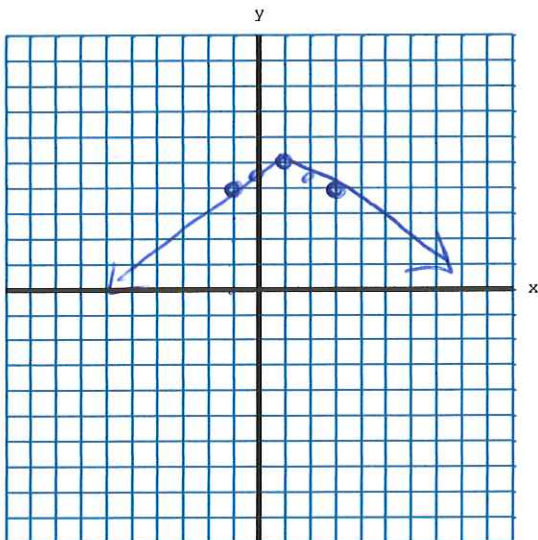
Parent Function

x	y
-2	4
-1	1
0	0
1	1
2	4

Vertex: (-3, -3)

$x-3$	$2y-3$
-5	5
-4	-1
-3	-3
-2	-1
-1	5

8. $f(x) = -\frac{1}{2}|x-1| + 5$



Parent Function

x	y
-2	2
-1	1
0	0
1	1
2	2

Vertex: (1, 5)

$x+1$	$-\frac{1}{2}y+5$
-1	4
0	4.5
1	5
2	4.5
3	4

Identifying transformations.

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

parent function: $y = x^2$

transformation: 4 right
2 up
vertical compression
by $\frac{1}{3}$

10. $f(x) = -|x+7|$

parent function: $y = |x|$

transformation: 7 left
vertical reflection

11. Let $g(x)$ be a horizontal translation left 2 units followed by a vertical translation up 5 units of the function $f(x) = 3(x-4)^2 - 2$. Write the rule for $g(x)$.

$$3(x-4+2)^2 - 2 + 5$$

$$g(x) = 3(x-2)^2 + 3$$

12. Let $g(x)$ be a vertical stretch by a factor of 4 of the function $f(x) = 3(x-4)^2 - 2$. Write the rule for $g(x)$.

$$g(x) = (4)(3)(x-4)^2 - 2$$

$$g(x) = 12(x-4)^2 - 2$$

13. Let $g(x)$ be a vertical translation 6 units up, followed by a vertical reflection over the x axis of $f(x) = x^2 - 4$. Write the rule for $g(x)$.

$$\text{step 1: } g(x) = (x)^2 - 4 + 6 \Rightarrow g(x) = x^2 + 2$$

$$\text{step 2: } g(x) = -1[x^2 + 2] \Rightarrow g(x) = -x^2 - 2$$

14. Let $g(x)$ be a horizontal translation left 3 units, followed by a vertical compression of $\frac{1}{2}$ and then a reflection over the x-axis of $f(x) = |x|$. Write the rule for $g(x)$.

$$\text{step 1: } g(x) = |x+3|$$

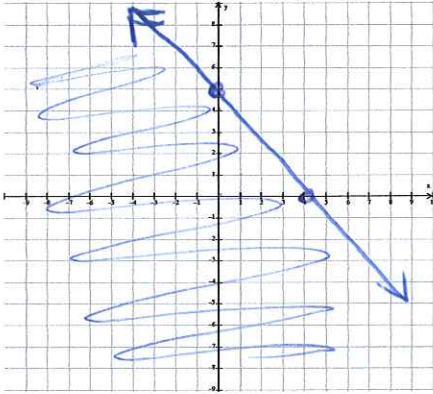
$$\text{step 2: } g(x) = \frac{1}{2}|x+3|$$

$$\text{step 3: } g(x) = -\frac{1}{2}|x+3|$$

2I Graphing linear & absolute value inequalities.

15. $5x + 4y \leq 20$

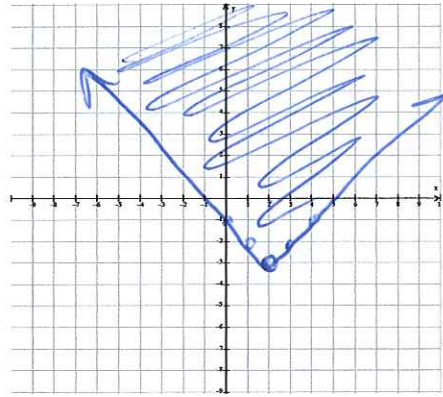
~~$y \leq -\frac{5x}{4} + \frac{20}{4}$~~



$y \leq -\frac{5}{4}x + 5$

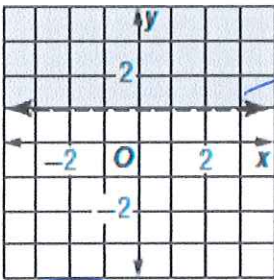
16. $y \geq |x - 2| - 3$

vertex (2, -3)



Writing inequalities from graphs.

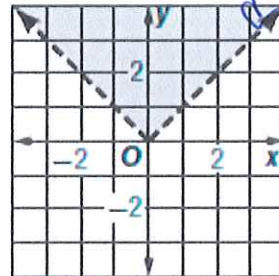
17.



$y = 1$

$y > 1$

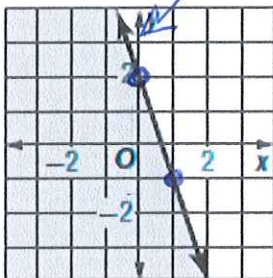
18.



$y = |x|$

$y > |x|$

19.



$y = -3x + 2$

$y \leq -3x + 2$