

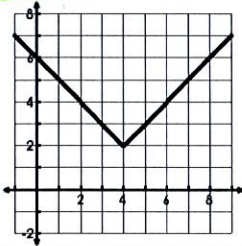
Name: Key

Date: _____

Write the following graphs as a piecewise function.

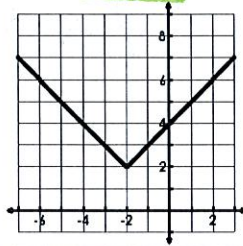
1.

$$f(x) = \begin{cases} x-2, & x \geq 4 \\ -x+6, & x < 4 \end{cases}$$



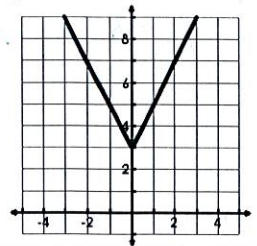
2.

$$f(x) = \begin{cases} x+4, & x \geq -2 \\ -x, & x < -2 \end{cases}$$



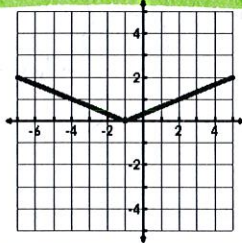
3.

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



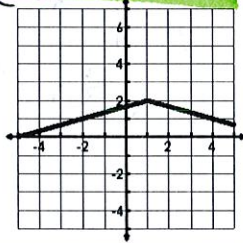
4.

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



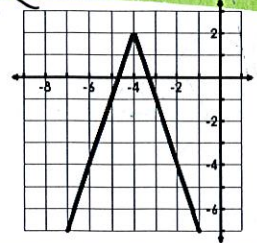
5.

$$f(x) = \begin{cases} -\frac{1}{3}x + \frac{7}{3}, & x \geq 1 \\ \frac{1}{3}x + \frac{5}{3}, & x < 1 \end{cases}$$



6.

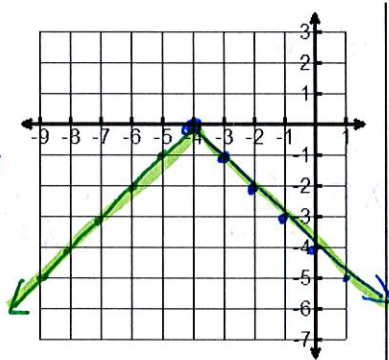
$$f(x) = \begin{cases} -3x-10, & x \geq -4 \\ 3x+14, & x < -4 \end{cases}$$



Write the following as a piecewise function & graph.

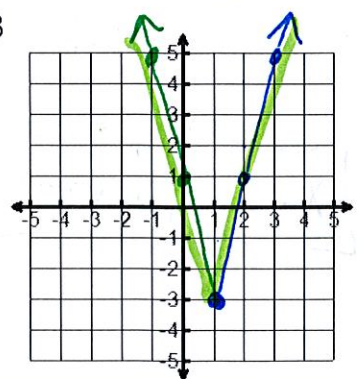
7. $f(x) = -|x+4|$

$$f(x) = \begin{cases} -x-4, & x \geq -4 \\ x+4, & x < -4 \end{cases}$$



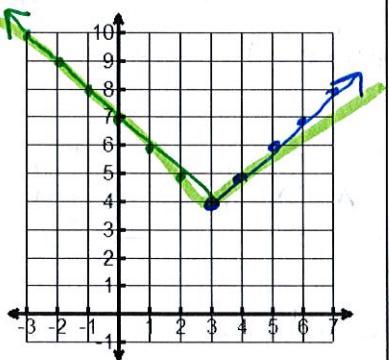
8. $f(x) = 4|x-1| - 3$

$$f(x) = \begin{cases} 4x-7, & x \geq 1 \\ -4x+1, & x < 1 \end{cases}$$



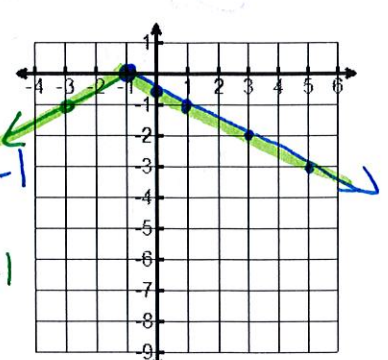
9. $f(x) = |x-3| + 4$

$$f(x) = \begin{cases} x+1, & x \geq 3 \\ -x+7, & x < 3 \end{cases}$$



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

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



Write the following absolute value functions as piecewise functions.

11. $f(x) = |x|$

$$f(x) = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

12. $f(x) = |x+2| - 3$

$$f(x) = \begin{cases} x-1, & x \geq -2 \\ -x-5, & x < -2 \end{cases}$$

13. $f(x) = -|x+2| + 5$

$$f(x) = \begin{cases} -x-3, & x \geq -2 \\ x+7, & x < -2 \end{cases}$$

14. $f(x) = 2|x-2| + 1$

$$f(x) = \begin{cases} 2x-3, & x \geq 2 \\ -2x+5, & x < 2 \end{cases}$$

15. $f(x) = -\frac{1}{3}|x-3| - 4$

$$f(x) = \begin{cases} -\frac{1}{3}x-3, & x \geq 3 \\ \frac{1}{3}x-5, & x < 3 \end{cases}$$

16. $f(x) = 3|x+2| - 1$

$$f(x) = \begin{cases} 3x+5, & x \geq -2 \\ -3x-7, & x < -2 \end{cases}$$

Solve the following equations for x .

17. ~~10/11~~ $-2|x| = -4$
 $|x| = 2$

$$x = 2 \quad x = -2$$

18. ~~10/11~~ $|x-4| - 5 = 1$
 $|x-4| = 6$

$$x = 10 \quad x = -2$$

19. ~~10/11~~ $-\frac{1}{3}|x-2| + 1 = 10$
 $|x-2| = -27$

~~$x = -25$ $x = 25$~~

NO SOLUTION

20. ~~10/11~~ $2|x+1| + 1 = 1$
 $|x+1| = 0$

$$x = -1$$

21. ~~10/11~~ $-3|x+5| + 2 = 5$
 $|x+5| = -1$

~~$x = -6$ $x = -4$~~

NO SOLUTION

22. ~~10/11~~ $|x+3| = 7x$

$$x = \frac{1}{2} \quad x = \frac{3}{8}$$