Name Key

Period: _____

Piecewise Functions

Evaluate the function for the given value of x.

$f(x) = \begin{cases} 3, & \text{if } x \le 0 \\ 2, & \text{if } x > 0 \end{cases}$ $g(x) = \begin{cases} x + 5, & \text{if } x \le 3 \\ 2x - 1, & \text{if } x > 3 \end{cases}$ $h(x) = \begin{cases} \frac{1}{2}x - 4, & \text{if } x \le -2 \\ 3 - 2x, & \text{if } x > -2 \end{cases}$

all

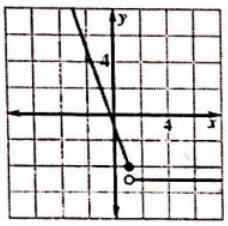
1. $f(2) = 2$
2. $f(-4) = 3$
3. $f(0) = 3$
4. $f\left(\frac{1}{2}\right) + 2f(6) = 2 + 2(2) = 6$
5. $g(7) = 13$
6. $3g(0) = 15$
7. $g(-1) = 4$
8. $g(3) - 4g(4) = 8 - 4(7) = -20$
9. $h(-4) = -6$
10. $h(-2) = -5$
11. $h(-1) + h(0)$ $5 + 3 = 8$
12. $h(6) = -9$

Match the piecewise function with its graph.

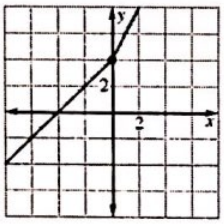
all

13. $f(x) = \begin{cases} x - 4, & \text{if } x \le 1 \\ 3x, & \text{if } x > 1 \end{cases}$ (E)
14. $f(x) = \begin{cases} x + 4, & \text{if } x \le 0 \\ 2x + 4, & \text{if } x > 0 \end{cases}$ (B)
15. $f(x) = \begin{cases} 3x - 2, & \text{if } x \le 1 \\ x + 2, & \text{if } x > 1 \end{cases}$ (D)
16. $f(x) = \begin{cases} 2x + 3, & \text{if } x \ge 0 \\ x + 4, & \text{if } x < 0 \end{cases}$ (F)
17. $f(x) = \begin{cases} 3x - 1, & \text{if } x \ge -1 \\ -5, & \text{if } x < -1 \end{cases}$ (C)
18. $f(x) = \begin{cases} -3x - 1, & \text{if } x \le 1 \\ -5, & \text{if } x > 1 \end{cases}$ (A)

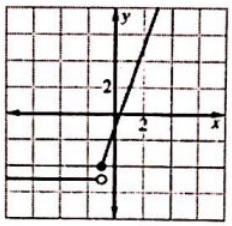
A.



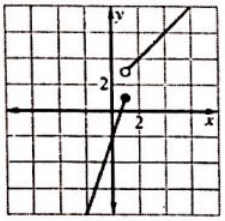
B.



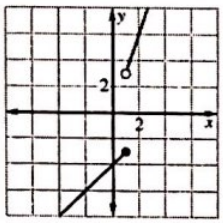
C.



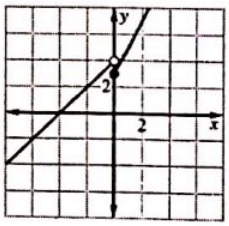
D.



E.



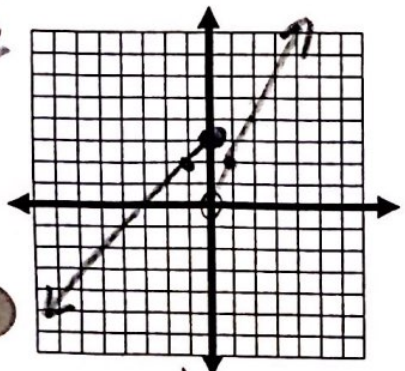
F.



Graph the function.

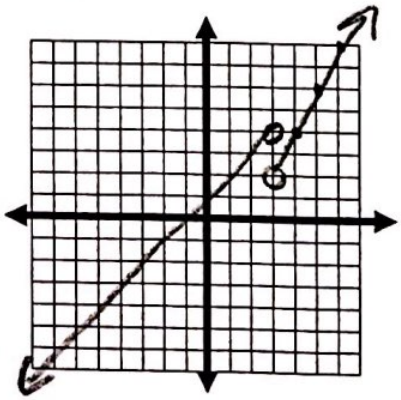
19. $f(x) = \begin{cases} x+3 & \text{if } x \le 0 \\ 2x & \text{if } x > 0 \end{cases}$

x	y
0	3
-1	2

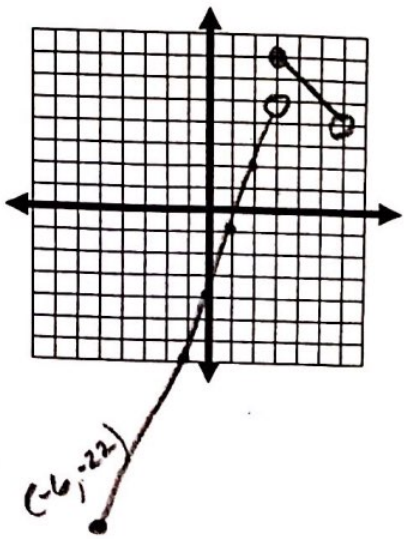


x	y
0	0
1	2

20. $f(x) = \begin{cases} x+1 & \text{if } x < 3 \\ 2x-4 & \text{if } x > 3 \end{cases}$



21. $f(x) = \begin{cases} 3x-4 & \text{if } -6 \le x < 3 \\ 10-x & \text{if } 3 \le x < 6 \end{cases}$



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Graph the function.

22.

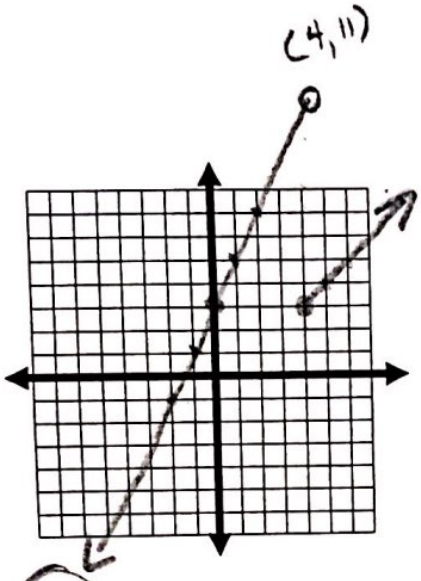
$$f(x)=\begin{cases}2x+3 & \text{if } x<4\\ x-1 & \text{if } x\geq 4\end{cases}$$

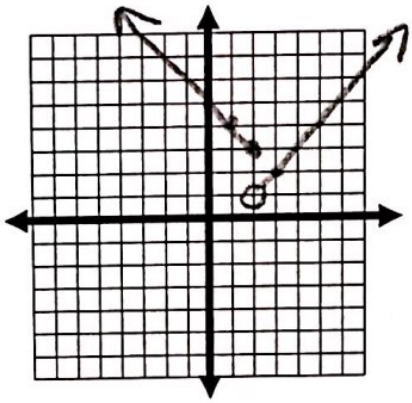
23.

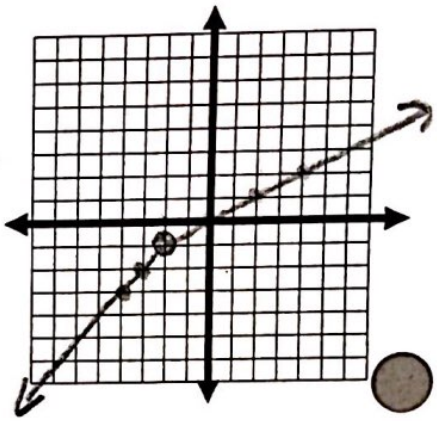
$$f(x)=\begin{cases}5-x & \text{if } x\leq 2\\ x-1 & \text{if } x>2\end{cases}$$

24.

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







25.

$$f(x)=\begin{cases}x+1 & \text{if } x<1\\ -x+1 & \text{if } 1\leq x<3\\ x-1 & \text{if } x\geq 3\end{cases}$$

26.

$$f(x)=\begin{cases}2 & \text{if } x\leq -3\\ -1 & \text{if } -3<x<3\\ 3 & \text{if } x\geq 3\end{cases}$$

27.

$$f(x)=\begin{cases}5 & \text{if } x<0\\ -\frac{1}{2}x+2 & \text{if } 0\leq x\leq 2\\ 1 & \text{if } x>2\end{cases}$$