

### Worksheet - Piecewise Functions

Evaluate the following for  $f(x) = \begin{cases} 3x - 5, & x > 4 \\ x^2, & x \leq 4 \end{cases}$ :

1.  $f(7)$

2.  $f(4)$

3.  $f(-3)$

Evaluate the following for  $f(x) = \begin{cases} -2|x + 1|, & x \leq 1 \\ 3, & 1 < x < 3 \\ 6 - 2x, & x \geq 3 \end{cases}$ :

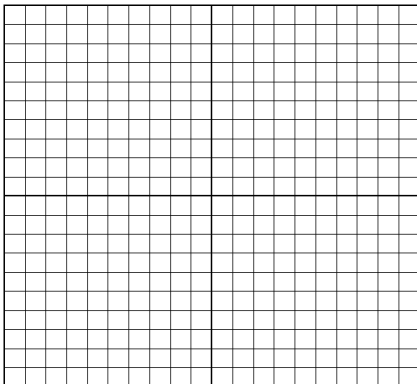
4.  $f(10)$

5.  $f(2)$

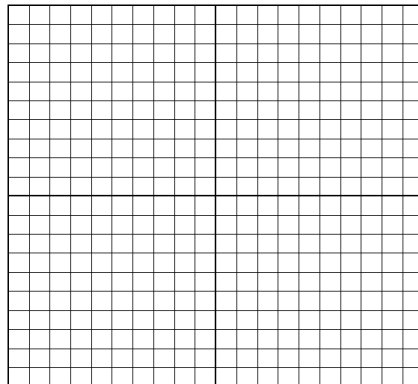
6.  $f(0)$

Graph the following piecewise functions.

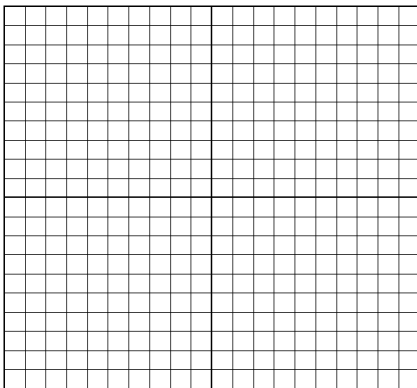
7.  $f(x) = \begin{cases} -2, & x < 0 \\ 3, & x \geq 0 \end{cases}$



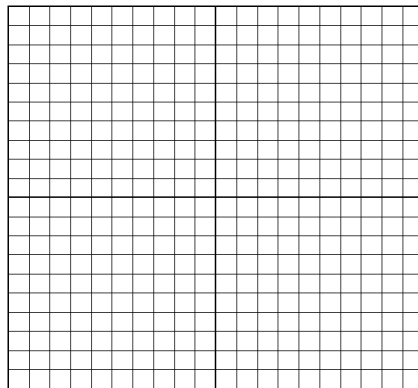
8.  $g(x) = \begin{cases} -x + 2, & x < 2 \\ x - 2, & x \geq 2 \end{cases}$



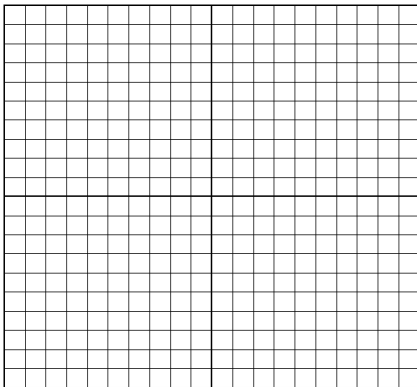
$$9. h(x) = \begin{cases} -3x + 2, & x \leq 2 \\ \frac{1}{2}x - 4, & x > 2 \end{cases}$$



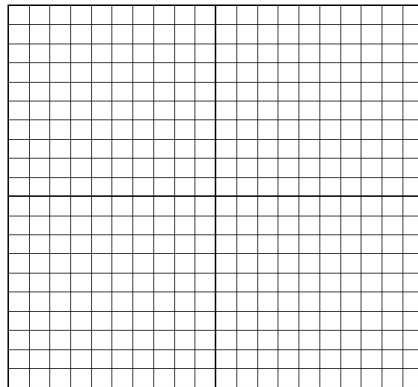
$$10. f(x) = \begin{cases} 4, & x \leq -2 \\ x^2, & -2 < x < 2 \\ 4, & x \geq 2 \end{cases}$$



$$11. g(x) = \begin{cases} 3x + 12, & x \leq -3 \\ |x|, & -3 < x < 3 \\ -3x + 12, & x \geq 3 \end{cases}$$



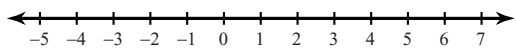
$$12. h(x) = \begin{cases} x^2 - 4, & x < 3 \\ \frac{2}{3}x - 5, & x \geq 3 \end{cases}$$



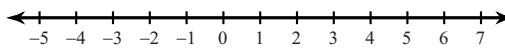
13. Which of the piecewise functions are continuous?

14. Which of the piecewise functions are discontinuous? (neither continuous nor discrete)

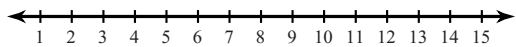
$$15) \quad |-8a - 3| > 11$$



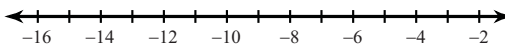
$$16) \quad |1 - 4k| \geq -11$$



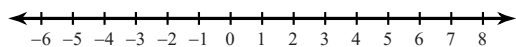
$$17) \quad 9|m - 8| - 10 < 26$$



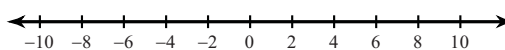
$$18) \quad 9|x + 8| + 10 < 55$$



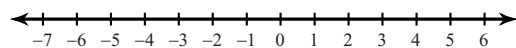
$$19) \quad 9|r - 2| - 10 < -73$$



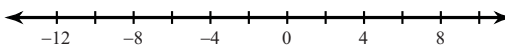
$$20) \quad 7\left|\frac{n}{3}\right| - 9 < 12$$



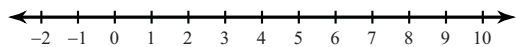
$$21) \quad 2|10b + 7| - 1 > 73$$



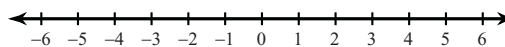
$$22) \quad 7 + |6v + 7| \leq 60$$



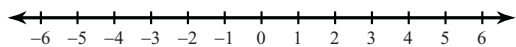
$$23) \quad 4|6 - 2a| + 8 \leq 24$$



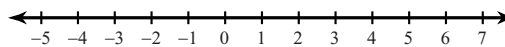
$$24) \quad 9|3n - 2| + 6 > 51$$



$$25) \quad 3 + 4|3x + 7| \geq -89$$

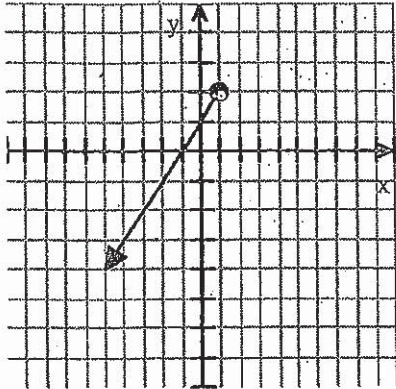


$$26) \quad 9|1 + 8n| - 3 \geq 78$$



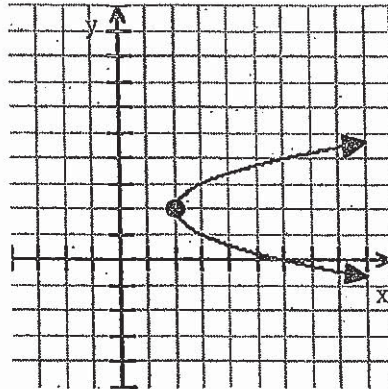
For each of the following, determine if the graph represents a function, the domain, and the range.

1)



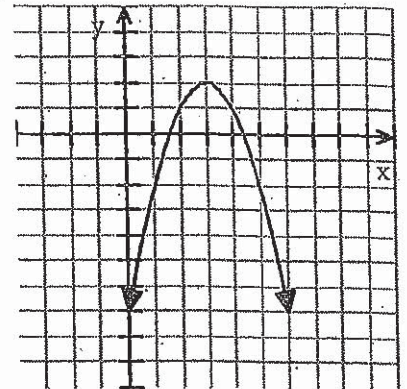
Function?      Domain:

2)



Function?      Domain:

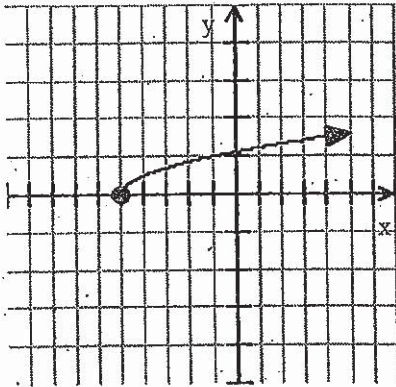
3)



Function?      Domain:

Range:

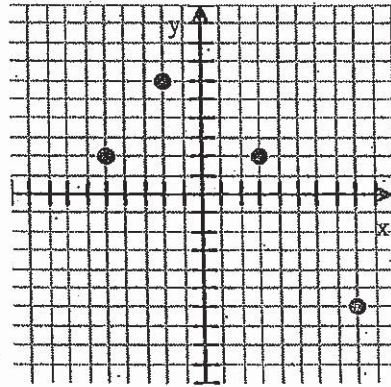
4)



Function?      Domain:

Range:

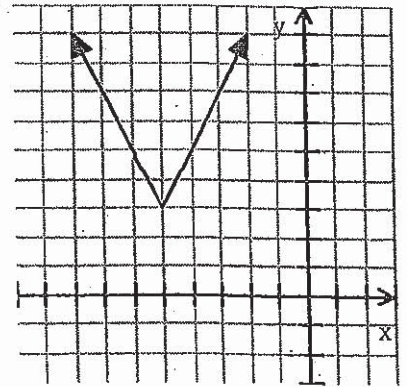
5)



Function?      Domain:

Range:

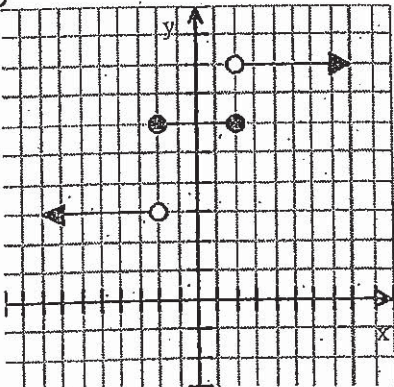
6)



Function?      Domain:

Range:

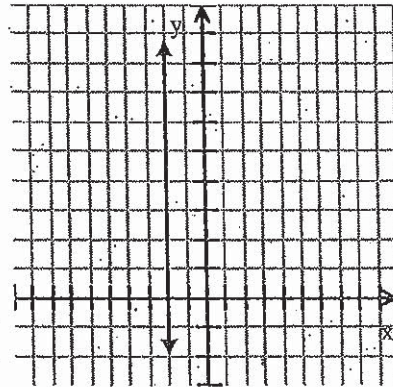
7)



Function?      Domain:

Range:

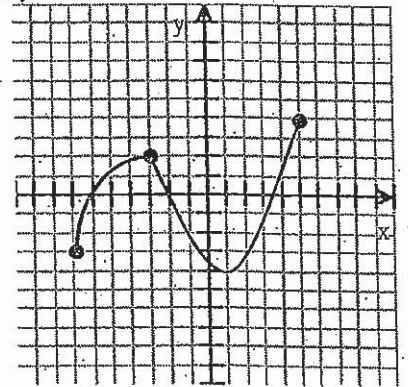
8)



Function?      Domain:

Range:

9)



Function?      Domain:

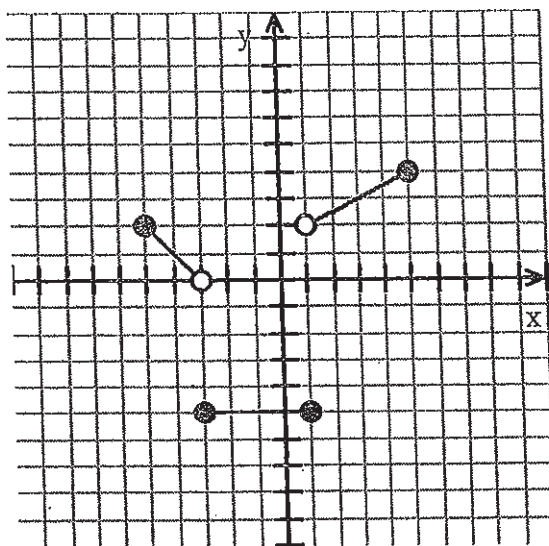
Range:

Range:

Range:

10) Given the graph, find the following:

- a)  $f(0)$
- b)  $f(1)$
- c)  $f(-5)$
- d)  $f(3)$
- e)  $f(-3)$
- f)  $f(5)$
- g)  $f(-2)$
- h)  $f(6)$



11) Suppose  $f(x) = 4x - 10$ ,  $g(x) = 2x^2 - 7$ ,  $h(x) = 3 - 5x$ . Evaluate each of the following:

- a)  $f(2)$
- b)  $g(2)$
- c)  $h(2)$
- d)  $f(-2)$
- e)  $g(-2)$
- f)  $h(-2)$
- g)  $f(0)$
- h)  $g(6)$

12) Write the piecewise function rule for the graph in #10 above.