

Algebra 2  
WS: Chapter 1 Review

Name Key  
Date 9/26 Block 3A

2017-18

1-4, evaluate the function when  $x = -2$ .

1.  $f(x) = x$   $f(-2) = -2$

2.  $g(x) = 5|x - 3|$

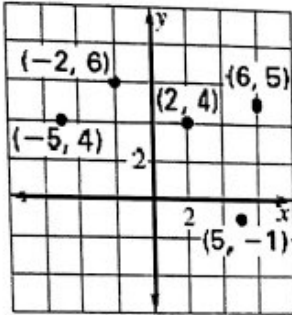
$g(-2) = 5|-2-3|$   $g(-2) = 25$

3.  $h(x) = -2x^2 + 1$   $h(-2) = -2(-2)^2 + 1$   
 $h(-2) = -7$

4.  $j(x) = x^3 + 2x^2$

$j(-2) = (-2)^3 + 2(-2)^2$   
 $= -8 + 8$   $j(-2) = 0$

Use the relation shown for problems 5-7.



5. Identify the domain of the relation.

$\{-5, -2, 2, 5, 6\}$

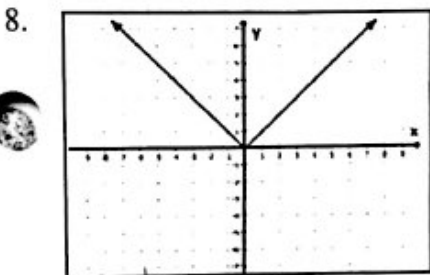
6. Identify the range of the relation.

$\{-1, 4, 5, 6\}$

7. Is the relation a function? Explain your answer.

Yes - each  $x$  is paired with exactly one  $y$ .

In 8-10, identify the parent function graphed by writing the name or the equation. Then identify the type of symmetry and the domain and range (using interval notation).

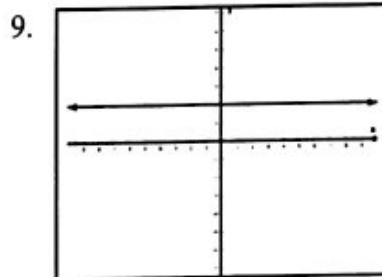


$f(x) = |x|$   
Parent Function: Absolute Value

Symmetry: y-axis

D:  $(-\infty, \infty)$

R:  $[0, \infty)$

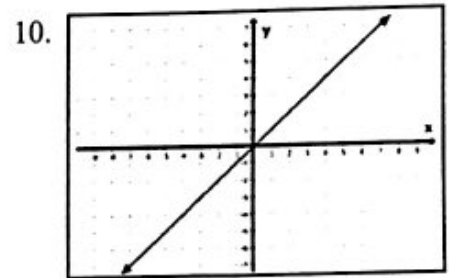


$f(x) = c$   
Parent Function: Constant

Symmetry: y-axis

D:  $(-\infty, \infty)$

R:  $\{c\}$



$f(x) = x$   
Parent Function: Linear

Symmetry: Origin

D:  $(-\infty, \infty)$

R:  $(-\infty, \infty)$

In 11-13, using the graph of  $f(x) = |x|$  as a guide, describe the transformations of each function and identify its domain and range.

11.  $g(x) = 2|x| - 4$

Transformations: vertically stretched by factor of 2, shifted down 4

D:  $(-\infty, \infty)$

R:  $[-4, \infty)$

12.  $h(x) = -2|x - 3| + 1$

Transformations: right 3, up 1, reflected in x-axis, vertically stretched by 2

D:  $(-\infty, \infty)$

R:  $(-\infty, 1]$

13.  $k(x) = 0.2|x + 1| - 2$

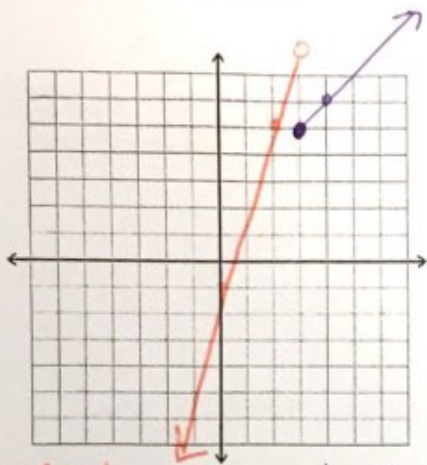
Transformations: vertically compressed by 0.2, left 1, down 2

D:  $(-\infty, \infty)$

R:  $[-2, \infty)$

In 14 - 16, graph each piecewise function. State the domain and range.

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



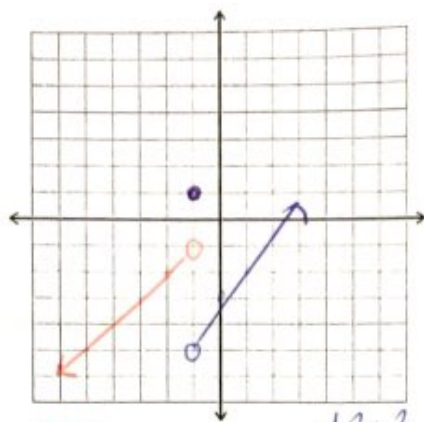
$x \mid 3x-1$   
3 | 8  
2 | 5

$x \mid x+2$   
3 | 5  
4 | 6

D:  $(-\infty, \infty)$

R:  $(-\infty, \infty)$

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



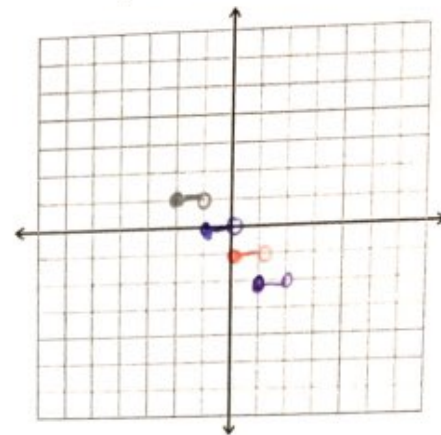
$x \mid x$   
-1 | -1  
-2 | -2

$x \mid 2x-3$   
-1 | -5  
0 | -3

D:  $(-\infty, \infty)$

R:  $(-\infty, \infty)$

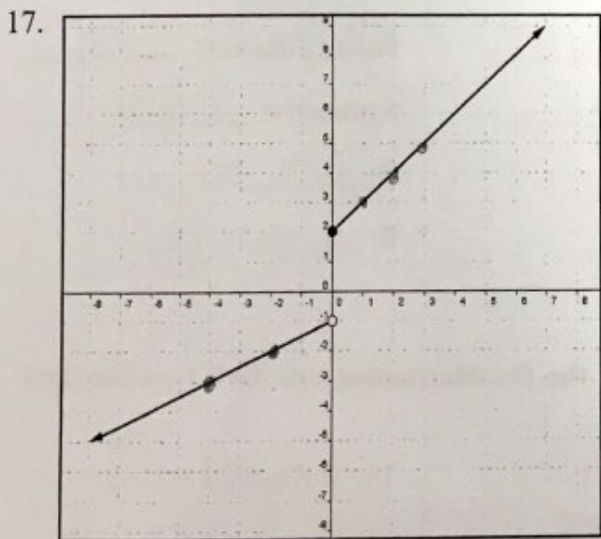
16.  $f(x) = \begin{cases} 1, & \text{if } -2 \leq x < -1 \\ 0, & \text{if } -1 \leq x < 0 \\ -1, & \text{if } 0 \leq x < 1 \\ -2, & \text{if } 1 \leq x < 2 \end{cases}$



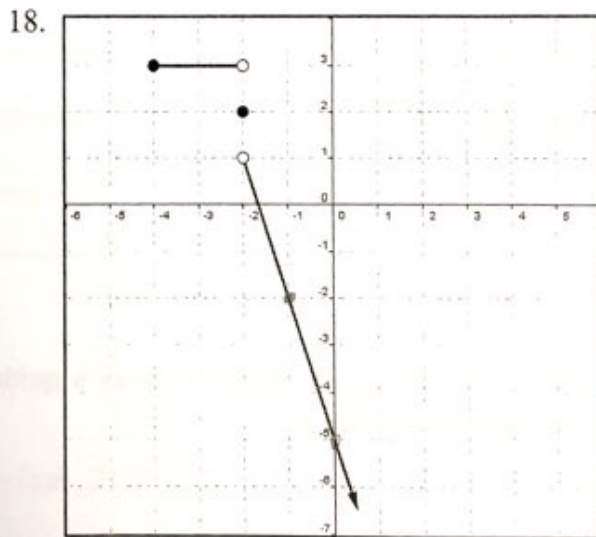
D:  $[-2, 2)$

R:  $\{-2, -1, 0, 1\}$

In 17 - 18, write a rule for the piecewise function.

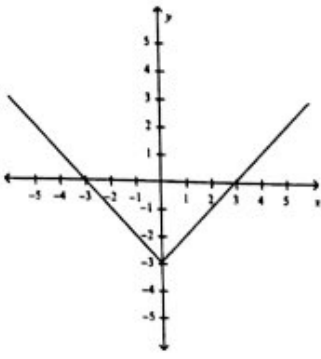


$f(x) = \begin{cases} \frac{1}{2}x - 1, & x < 0 \\ x + 2, & x \geq 0 \end{cases}$



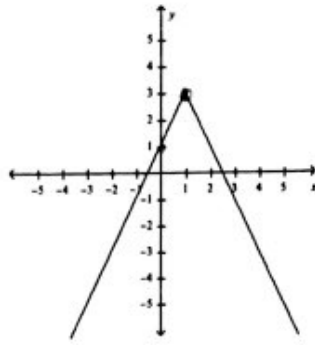
$f(x) = \begin{cases} 3, & -4 \leq x < -2 \\ 2, & x = -2 \\ -1, & x > -2 \end{cases}$

In 19 - 21, write an equation for each graph shown.



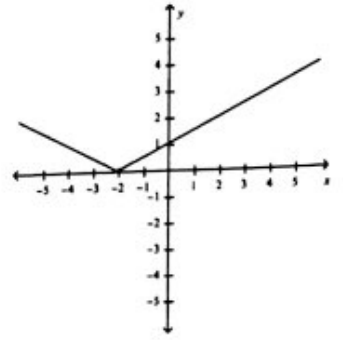
$$f(x) = |x| - 3$$

20.



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

21.



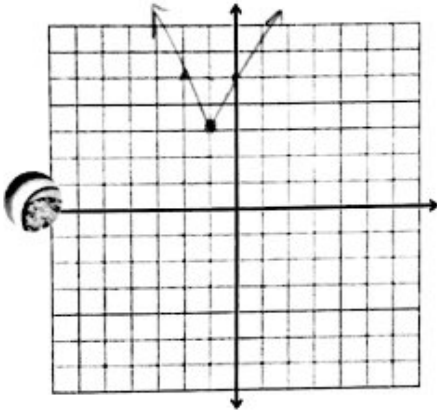
$$f(x) = \frac{1}{2}|x + 2|$$

In 22 - 24, graph the absolute value function. State the domain and range.

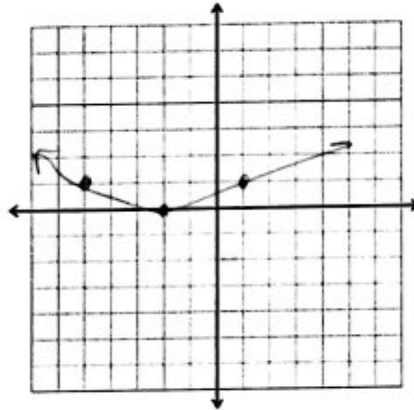
22.  $f(x) = 2|x + 1| + 3$   $\checkmark$   $(-1, 3)$

23.  $f(x) = \frac{1}{3}|x - 2|$   $\checkmark$   $(2, 0)$

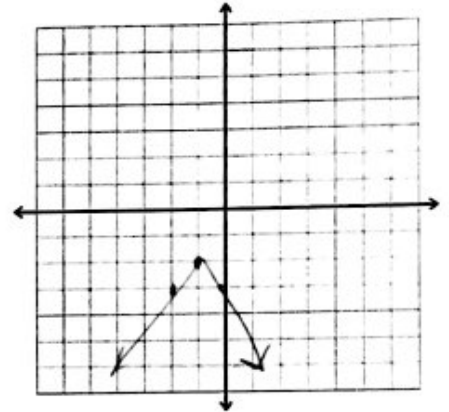
24.  $f(x) = -|x + 1| - 2$   $\checkmark$   $(-1, -2)$



D:  $(-\infty, \infty)$   
R:  $[3, \infty)$



D:  $(-\infty, \infty)$   
R:  $[0, \infty)$



D:  $(-\infty, \infty)$   
R:  $(-\infty, -2]$

In 25 - 27, solve each three-variable system. SHOW ALL WORK!!

25.  $2x - y + 2z = 15$   
 $-x + y + z = 3$   
 $3x - y + 2z = 18$

$(3, 1, 5)$

26.  $a + b = 3$   
 $-b + c = 3$   
 $a + 2c = 10$

$(2, 1, 4)$

27.  $2x + 3y + 4z = 2$   
 $5x - 2y + 3z = 0$   
 $x - 5y - 2z = -4$

$(2, 2, -2)$



$$\begin{array}{r}
 25. \quad 2x - y + 2z = 15 \\
 \quad -x + y + z = 3 \\
 \quad 3x - y + 2z = 18
 \end{array}
 \begin{array}{l}
 \left. \begin{array}{l} \\ \\ \end{array} \right\} \begin{array}{l} x + 3z = 18 \\ -(2x + 3z = 21) \end{array} \\
 \hline
 \end{array}
 \begin{array}{l}
 x + 3z = 18 \\
 -2x - 3z = -21 \\
 \hline
 \end{array}$$

$$\begin{array}{l}
 \begin{array}{l}
 2(3) - y + 2(5) = 15 \\
 -y = -1 \\
 \boxed{y = 1}
 \end{array}
 \quad \leftarrow \quad \begin{array}{l}
 3 + 3z = 18 \\
 3z = 15 \\
 \boxed{z = 5} \\
 \boxed{(3, 1, 5)}
 \end{array}
 \quad \leftarrow \quad \begin{array}{l}
 -x = -3 \\
 \boxed{x = 3}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 26. \quad a + b = 3 \\
 \quad -b + c = 3 \\
 \quad a + 2c = 10
 \end{array}
 \begin{array}{l}
 \left. \begin{array}{l} \\ \\ \end{array} \right\} \begin{array}{l} -(a + c = 6) \\ \rightarrow a + 2c = 10 \end{array} \\
 \hline
 \end{array}
 \begin{array}{l}
 -a - c = -6 \\
 a + 2c = 10 \\
 \hline
 \end{array}$$

$$\begin{array}{l}
 \begin{array}{l}
 2 + b = 3 \\
 \boxed{b = 1}
 \end{array}
 \quad \leftarrow \quad \begin{array}{l}
 a + 4 = 6 \\
 \boxed{a = 2}
 \end{array}
 \quad \leftarrow \quad \begin{array}{l}
 \boxed{c = 4}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 27. \quad (2x + 3y + 4z = 2) \\
 \quad (5x - 2y + 3z = 0) \\
 \quad (3x - 5y - 2z = -4)
 \end{array}
 \begin{array}{l}
 10x + 15y + 20z = 10 \\
 -10x + 4y - 6z = 0 \\
 \hline
 19y + 14z = 10
 \end{array}$$

$$\begin{array}{l}
 5x - 2y + 3z = 0 \\
 -5x + 25y + 10z = 20 \\
 \hline
 23y + 13z = 20
 \end{array}$$

$$\begin{array}{l}
 -13(19y + 14z = 10) \quad -247y - 182z = -130 \\
 14(23y + 13z = 20) \quad 322y + 182z = 280 \\
 \hline
 75y = 150 \\
 \boxed{y = 2}
 \end{array}$$

$$\begin{array}{l}
 23(2) + 13z = 20 \\
 13z = -26 \\
 \boxed{z = -2}
 \end{array}$$

$$\boxed{x = 2}$$