Algebra 2
WS: 2.7

Name Key 2017-18
Date 9/15/17 **Block** 3A

In 1 – 4, evaluate each function for the indicated values.

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

a.) $f(4) = 2(4) - 1 = 7$

b.) $f(0) = 0$

2.) $f(x) = \begin{cases} x + 3, \text{ if } x \leq 1 \\ 2(x+1), \text{ if } 1 < x \leq 3 \\ 11 - x, \text{ if } x > 3 \end{cases}$

a.) $f(0) = 0 + 3 = 3$

b.) $f(4) = 11 - 4 = 7$

c.) $f(2) = 2(2+1) = 6$

3.) $f(x) = \begin{cases} 5 - x, \text{ if } x \leq 4 \\ \frac{1}{4}x, \text{ if } 4 < x \leq 8 \\ 10 - x, \text{ if } x > 8 \end{cases}$

a.) $f(10) = 10 - 10 = 0$

b.) $f(5) = \frac{1}{4}(5) = \frac{5}{4}$

c.) $f(2) = 5 - 2 = 3$

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

a.) $f(4) = 2(4) - 1 = 7$

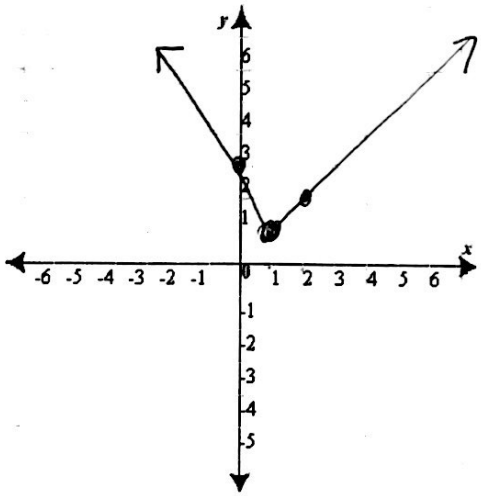
b.) $f(2) = 2(2) - 1 = 3$

In 5 – 7, graph each function. State the domain and range.

5.) $f(x) = \begin{cases} x, \text{ if } x > 1 \\ -2x + 3, \text{ if } x \leq 1 \end{cases}$

x	x
1	1
2	2

x	-2x+3
1	1
0	3



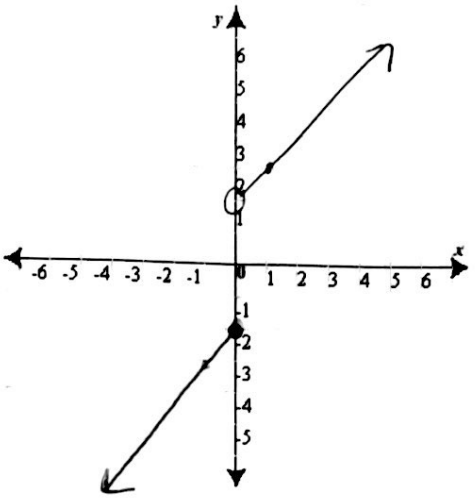
D: $(-\infty, \infty)$

R: $[1, \infty)$

6.) $f(x) = \begin{cases} x-2, \text{ if } x \le 0 \\ x+2, \text{ if } x > 0 \end{cases}$

x	x-2
0	-2
-1	-3

x	x+2
0	2
1	3



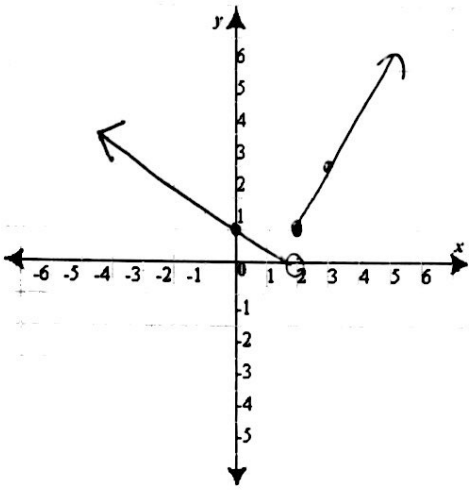
D: $(-\infty, \infty)$

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

7.) $f(x) = \begin{cases} -\frac{1}{2}x+1, \text{ if } x < 2 \\ 2x-3, \text{ if } x \ge 2 \end{cases}$

x	$-\frac{1}{2}x+1$
2	0
0	1

x	2x-3
2	1
3	3

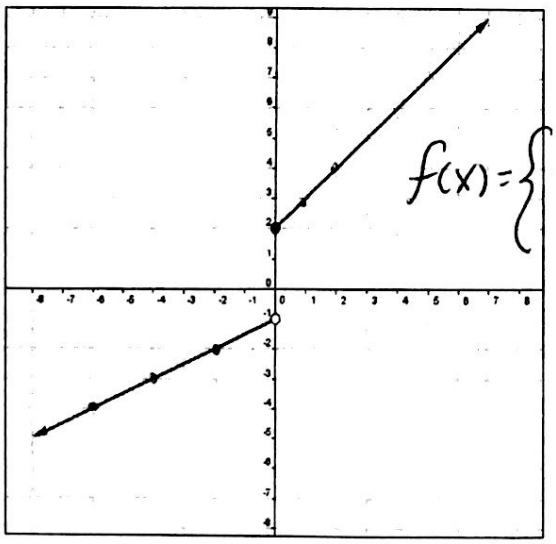


D: $(-\infty, \infty)$

R: $(0, \infty)$

In 8 – 9, write a rule for each piecewise function.

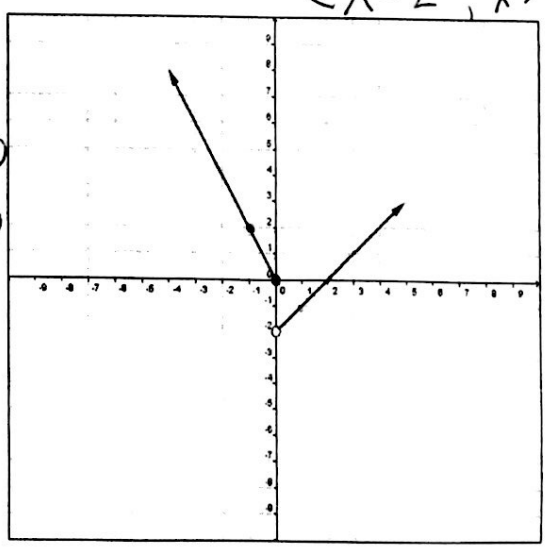
8.)



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

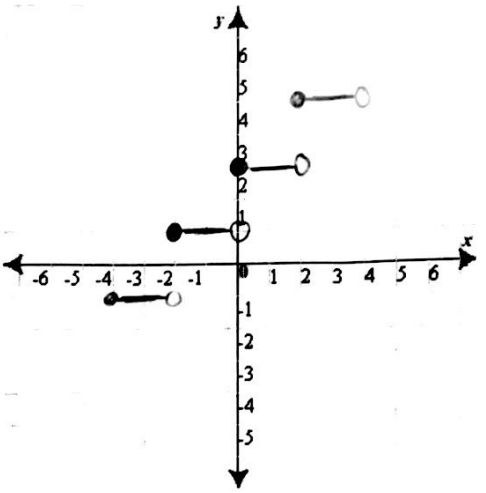
9.)

$f(x) = \begin{cases} -2x, & x \le 0 \\ x-2, & x>0 \end{cases}$



In 10 – 11, graph each step function. State the domain and range of each.

10.) $f(x) = \begin{cases} -1, \text{ if } -4 \le x < -2 \\ 1, \text{ if } -2 \le x < 0 \\ 3, \text{ if } 0 \le x < 2 \\ 5, \text{ if } 2 \le x < 4 \end{cases}$



D: $[-4, 4]$

R: $\{-1, 1, 3, 5\}$

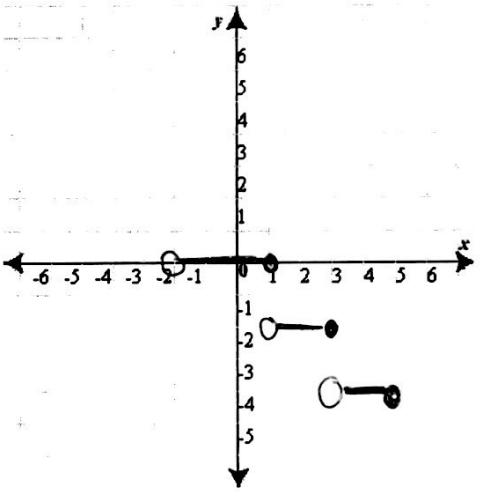
X	-1
-4	-1 ●
-2	-1 ○

X	1
-2	1 ●
0	1 ○

X	3
0	3 ●
2	3 ○

X	5
2	5 ●
4	5 ○

11.) $f(x) = \begin{cases} 0, \text{ if } -2 < x \le 1 \\ -2, \text{ if } 1 < x \le 3 \\ -4, \text{ if } 3 < x \le 5 \end{cases}$



X	0
-2	0 ○
1	0 ●

X	-2
1	-2 ○
3	-2 ●

X	-4
3	-4 ○
5	-4 ●

D: $(-2, 5]$

R: $\{-4, -2, 0\}$