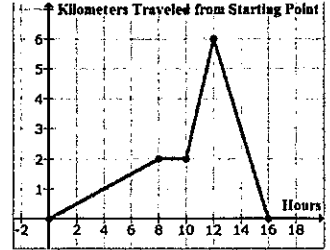


Do Now: Below is a graph that describes Ms. Ackerman's hiking trip.

- a) Did which period of time did Ms. Ackerman traveled the quickest? Justify your answer.

12-14; steepest slope



- b) Explain what Ms. Ackerman could have been doing during 8th through the 10th hour.

she stopped to eat with her friends & change her clothes.

AIM: HOW CAN WE GRAPH PIECEWISE FUNCTIONS? (Day 1)

1. On the following graph, complete the tables and graph the following piecewise function.

$f(x) = 2x + 1$

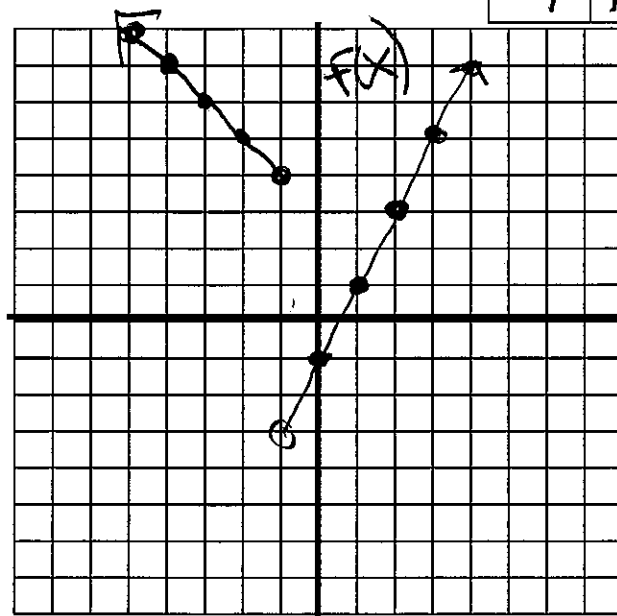
$f(x) = \begin{cases} 2x - 1, & \text{if } x > -1 \\ -x + 3, & \text{if } x \leq -1 \end{cases}$

$f(x) = -x + 3$

open circle →

x	y
-1	-3
0	-1
1	1
2	3
3	5
4	7
5	9

x	y
-1	4
-2	5
-3	6
-4	7
-5	8
-6	9
-7	10



2. On the following graph, complete the tables and graph the following piecewise function.

$$f(x) = -x$$

open circle →

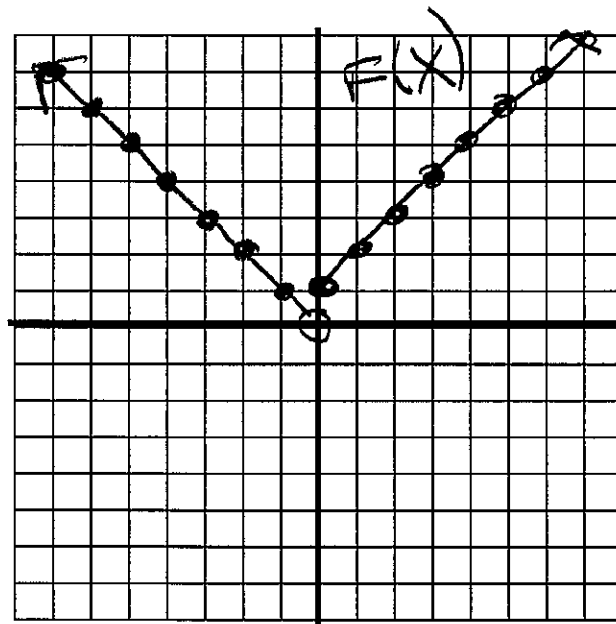
x	y
0	0
-1	1
-2	2
-3	3
-4	4
-5	5
-6	6

$$f(x) = \begin{cases} -x & \text{if } x < 0 \\ x+1 & \text{if } x \geq 0 \end{cases}$$

closed circle →

$$f(x) = x+1$$

x	y
0	1
1	2
2	3
3	4
4	5
5	6
6	7



a) What is the domain in interval notation?

$$(-\infty, \infty)$$

b) What is the range in interval notation?

$$(0, \infty)$$

c) What is the domain in set builder notation?

$$\{x \mid -\infty < x < \infty\}$$

or $\{x \mid x \in \mathbb{R}\}$

d) What is the range in set builder notation?

$$\{y \mid 0 < y < \infty\}$$

$$\{y \mid y > 0\}$$

3. On the following graph, complete the tables and graph the following piecewise function.

$$f(x) = 3$$

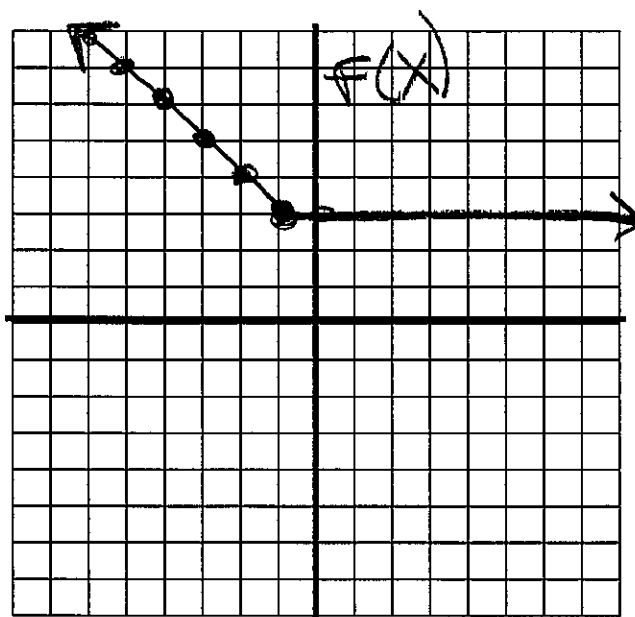
open circle →

x	y
-1	3
0	3
1	3
2	3
3	3
4	3
5	3

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

closed circle →

x	y
-1	3
-2	4
-3	5
-4	6
-5	7
-6	8
-7	9



a) What is the domain in interval notation?

$$(-\infty, \infty)$$

b) What is the range in interval notation?

$$[3, \infty)$$

d) What is the domain in set builder notation?

$$\{x \mid -\infty < x < \infty\}$$

$$\{x \mid x \in \mathbb{R}\}$$

d) What is the range in set builder notation?

$$\{y \mid 3 \leq y < \infty\}$$

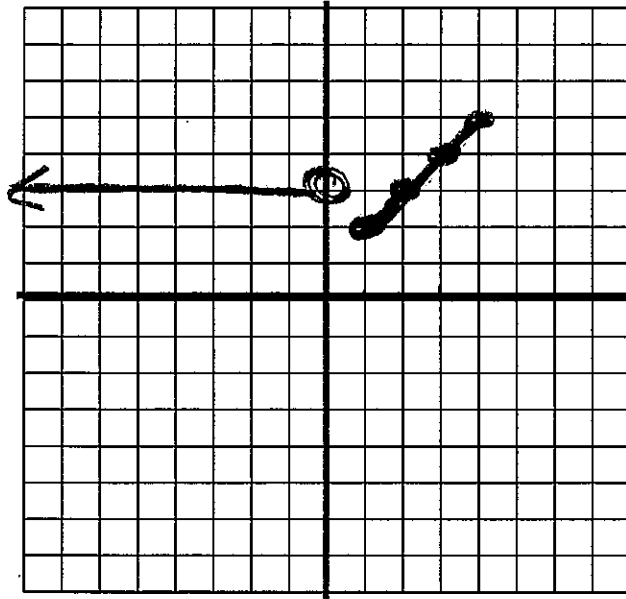
$$\{y \mid y \geq 3\}$$

4. On the following graph, complete the tables and graph the following piecewise function.

$$f(x) = 3$$

x	y
-1	3
2	3
3	3
4	3
5	3

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



$$f(x) = x + 1$$

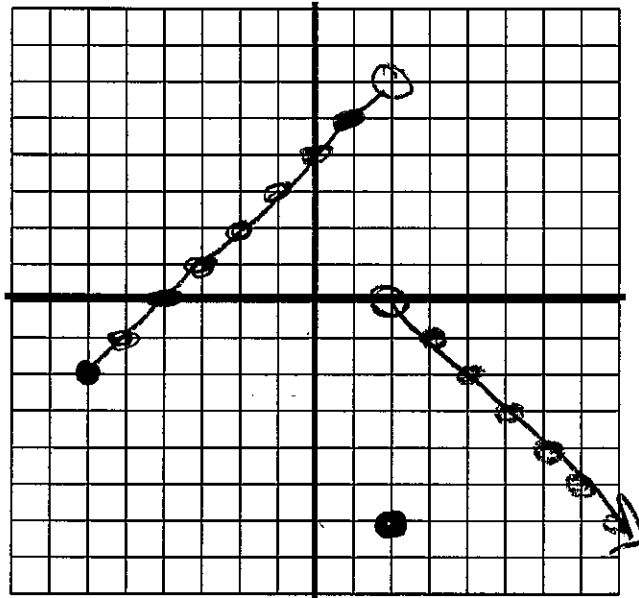
x	y
2	3
3	4
4	5

5. On the following graph, complete the tables and graph the following piecewise function.

$$f(x) = x + 4$$

x	y
0	-2
-1	-1
-4	0
-3	-1
-2	0
-1	1
0	2
1	3
2	4

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



$$f(x) = -x + 2$$

x	y
2	0
3	-1
4	-2
5	-3
6	-4