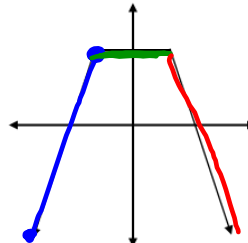
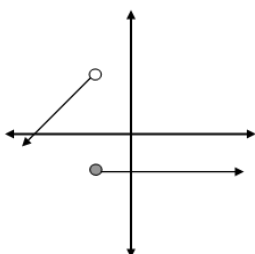
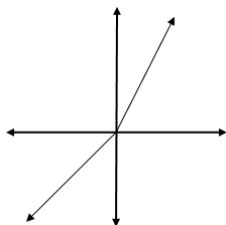


2-6C Piecewise Functions

- a function that is written using two or more functions.
- graph each "piece" separately, using the defined x values.



Examples: graph the following piecewise functions. Then state the domain and range of the graph. Afterward, evaluate the desired points.

1. $f(x) = \begin{cases} 2x + 5 & \text{when } x < -1 \\ 3 & \text{when } x \geq -1 \end{cases}$

$y = 2x + 5$

| x | y |
|----|----|
| -1 | 3 |
| -2 | 1 |
| -3 | -1 |

domain: \mathbb{R}

range:

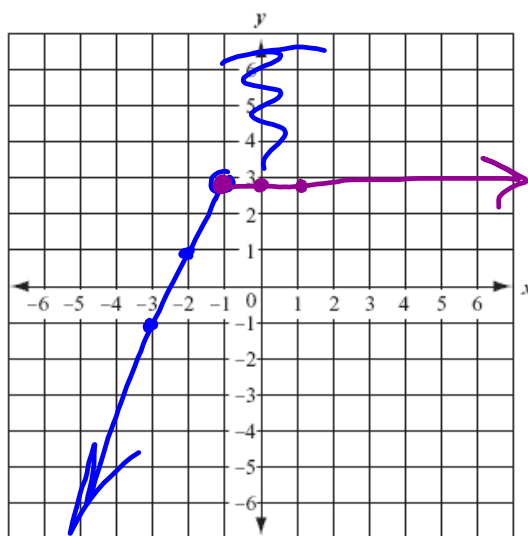
$y \leq 3$

a. $f(-3) = -1$

$y = 3$

| x | y |
|----|---|
| -1 | 3 |
| 0 | 3 |
| 1 | 3 |

b. $f(-1) = 3$



c. $f(4) = 3$

Examples: graph the following piecewise functions. Then state the domain and range of the graph. Afterward, evaluate the desired points.

$$2) f(x) = \begin{cases} 2x + 4 & \text{when } x > 0 \\ 4 - 2x & \text{when } x < 0 \end{cases}$$

$$y = 2x + 4$$

| x | y |
|---|---|
| 0 | 4 |
| 1 | 6 |
| 2 | 8 |

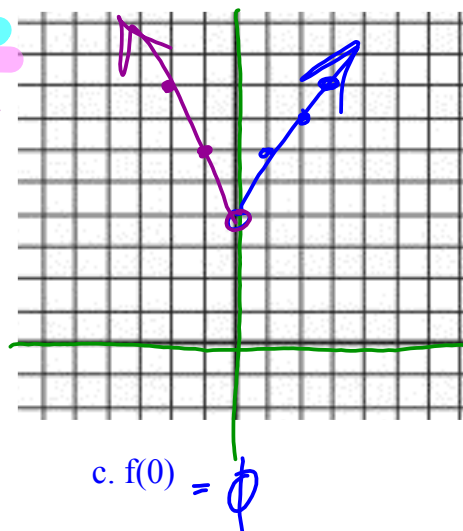
domain: $x \neq 0$
range: $y > 4$

a. $f(-3) = 10$

$$y = 4 - 2x$$

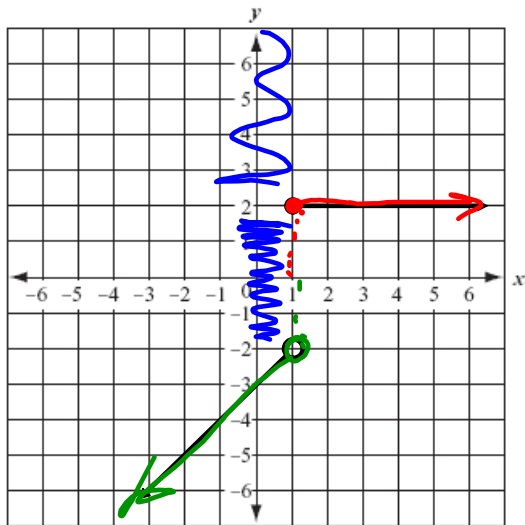
| x | y |
|----|---|
| 0 | 4 |
| -1 | 6 |
| -2 | 8 |

b. $f(5) = -14$



c. $f(0) = \emptyset$

Identify and write the piecewise function that belongs to the graph below. Then state the domain and range.



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

$$D: \mathbb{R}$$

$$R: y = 2 \text{ or } y < -2$$

$$y = \frac{x}{3}$$

| x | y |
|----|---|
| 0 | |
| -3 | |
| -6 | |

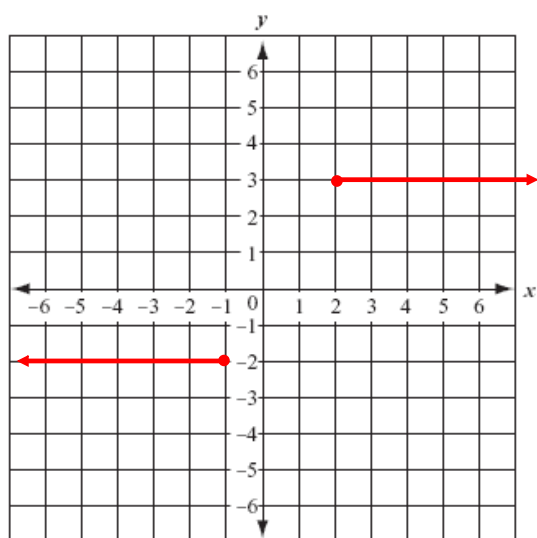
$$y = 2x - 6$$

| x | y |
|---|---|
| 0 | |
| 1 | |
| 2 | |

$$y = 1$$

| x | y |
|---|---|
| 2 | |
| 3 | |
| 4 | |

Identify and write the piecewise function that belongs to the graph below. Then state the domain and range.



2-6C Worksheet