

Name _____

Advanced Algebra (H) ^{Graphs of} Split Functions From Equations

Graph the following. Use the graph to determine the domain and range.

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

$$10. f(x) = \begin{cases} -1, & x < -1 \\ -|x|, & -1 \leq x \leq 1 \\ -1, & x > 1 \end{cases}$$

$$2. f(x) = \begin{cases} 3, & x \leq 0 \\ -3, & x > 0 \end{cases}$$

$$11. f(x) = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

$$3. f(x) = \begin{cases} 3, & x < 0 \\ 0, & x = 0 \\ -1, & x > 0 \end{cases}$$

$$4. f(x) = \begin{cases} 0, & x < -5 \\ 1, & -5 \leq x \leq 0 \\ 2, & x > 0 \end{cases}$$

$$5. f(x) = \begin{cases} x, & 0 \leq x \leq 3 \\ 5, & x > 3 \end{cases}$$

$$6. f(x) = \begin{cases} \frac{1}{2}x, & 0 \leq x < 4 \\ 2, & x \geq 4 \end{cases}$$

$$7. f(x) = \begin{cases} x+1, & x \geq 0 \\ x-1, & x < 0 \end{cases}$$

$$8. f(x) = \begin{cases} 0, & |x| \leq 1 \\ x-1, & |x| > 1 \end{cases}$$

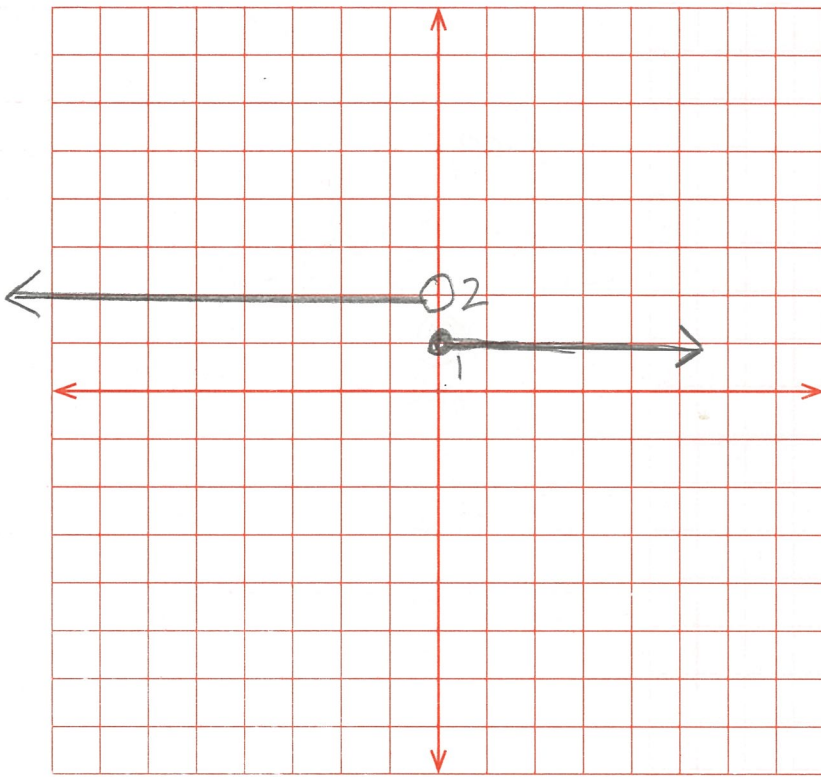
$$9. f(x) = \begin{cases} 2x, & 2 \leq x < 3 \\ x+2, & 0 \leq x \leq 2 \\ 2, & -3 \leq x \leq 0 \end{cases}$$

Split Functions from Equations

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

$$D: \mathbb{R}'s \quad \text{or } D: (-\infty, \infty)$$

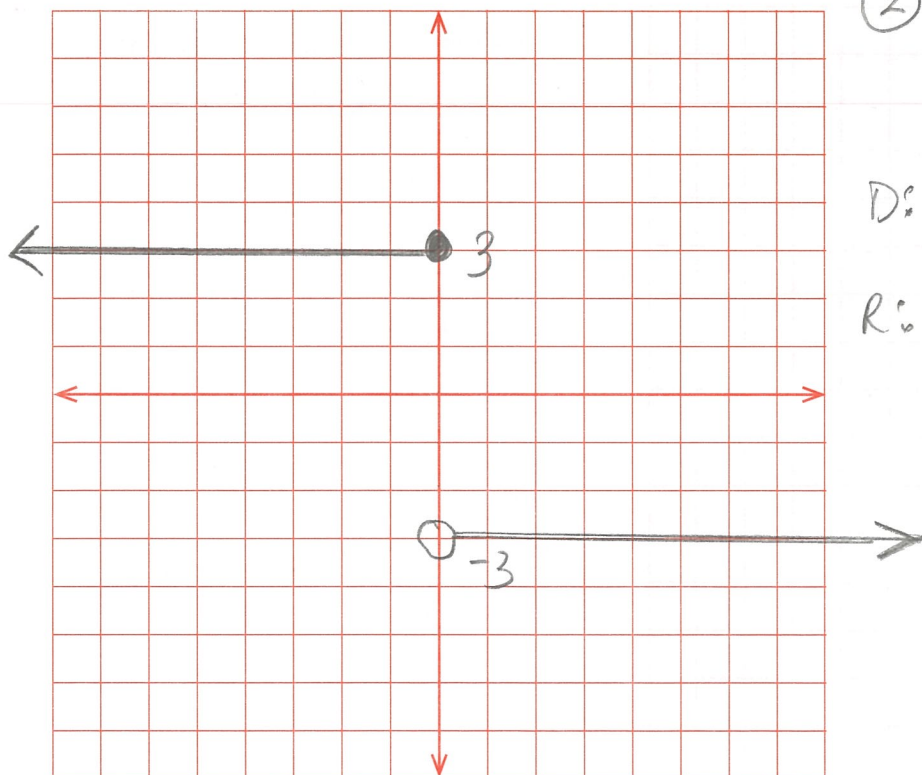
$$R: y=1, y=2 \quad R: [1] \cup [2]$$

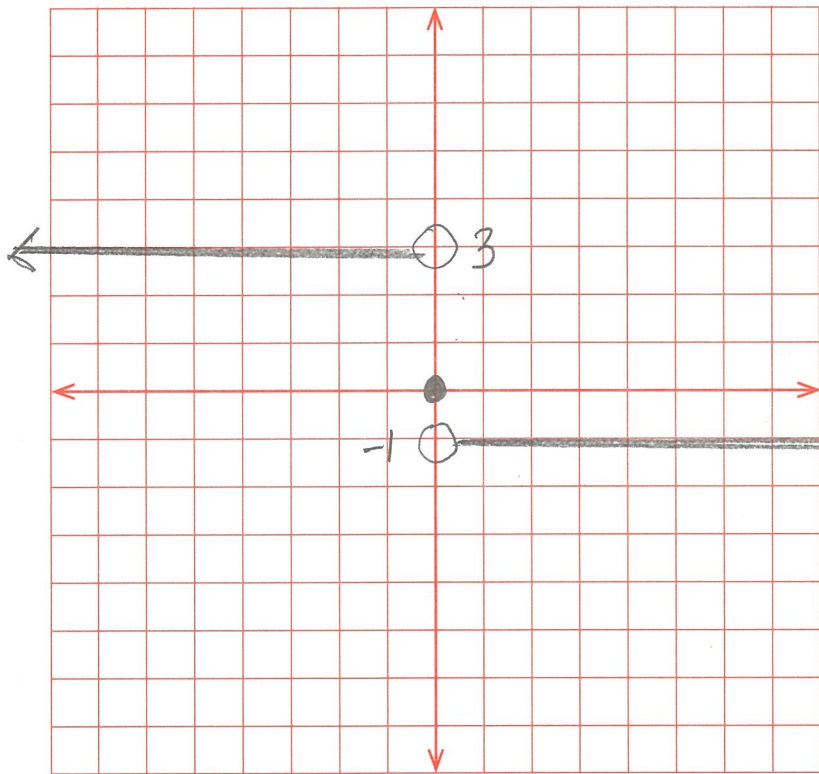


$$\textcircled{2} f(x) = \begin{cases} 3, & x \leq 0 \\ -3, & x > 0 \end{cases}$$

$$D: \mathbb{R}'s \quad \text{OR} \quad D: (-\infty, \infty)$$

$$R: y=-3, y=3 \quad R: [-3] \cup [3]$$





$$\textcircled{3} f(x) = \begin{cases} 3, & x < 0 \\ 0, & x = 0 \\ -1, & x > 0 \end{cases}$$

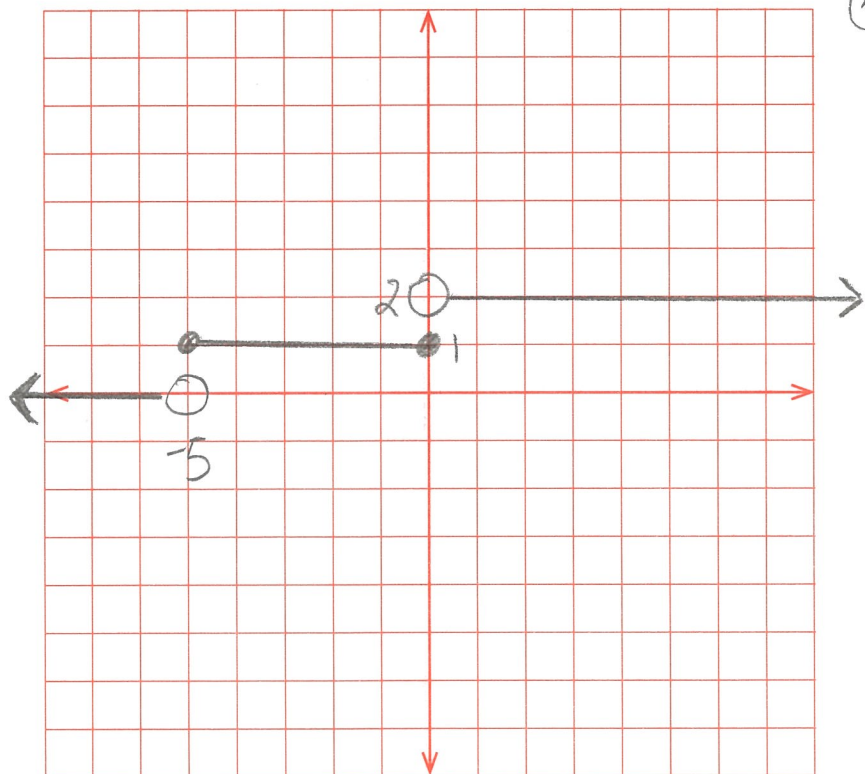
$$D: (-\infty, \infty)$$

$$R: [-1] \cup [0] \cup [3]$$

OR

$$D: \mathbb{R}'s$$

$$R: y = -1, y = 0, y = 3$$



$$\textcircled{4} f(x) = \begin{cases} 0, & x < -5 \\ 1, & -5 \leq x \leq 0 \\ 2, & x > 0 \end{cases}$$

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

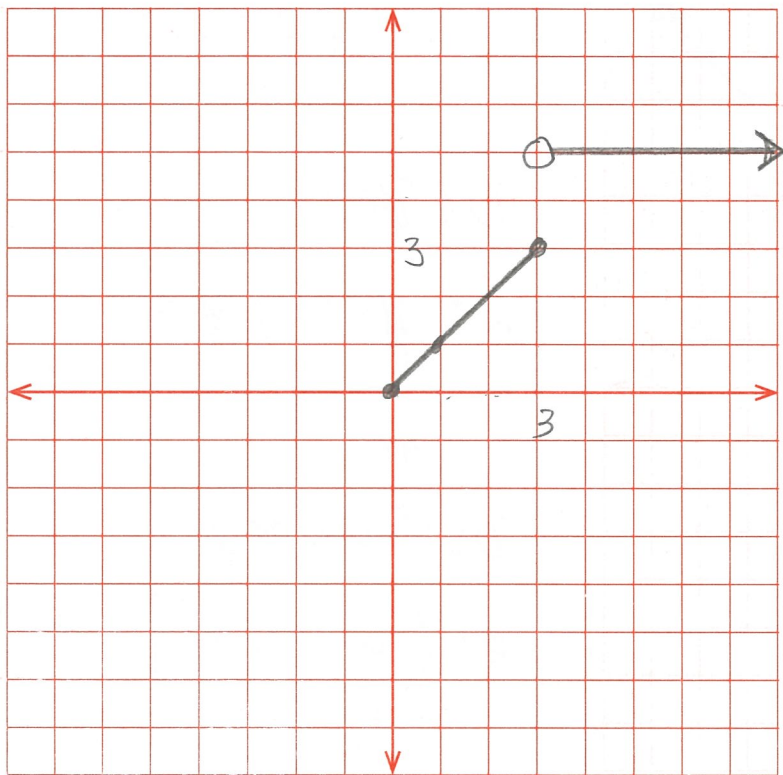
$$R: [0] \cup [1] \cup [2]$$

OR

$$D: \mathbb{R}'s$$

$$R: y = 0, y = 1, y = 2$$

$$⑤ f(x) = \begin{cases} x, & 0 \leq x \leq 3 \\ 5, & x > 3 \end{cases}$$



$$D: x \geq 0$$

$$R: \cancel{0 \leq y \leq 5} \quad 0 \leq y \leq 3, \quad y = 5$$

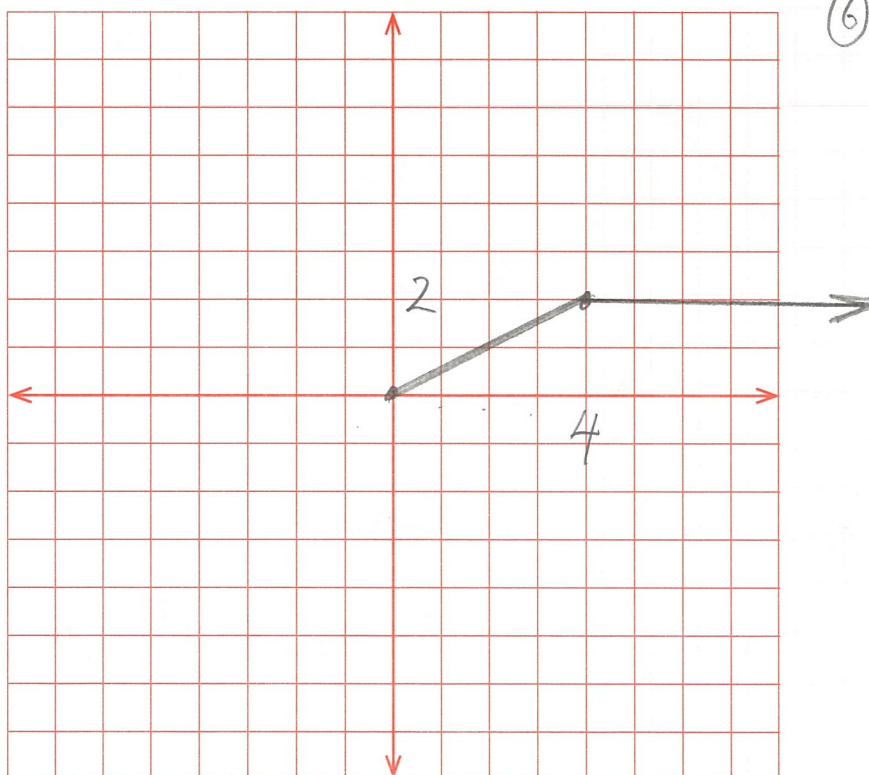
or

$$D: [0, \infty)$$

$$R: \cancel{[0, 5]}$$

$$[0, 3] \cup [5, \infty)$$

$$⑥ f(x) = \begin{cases} \frac{1}{2}x, & 0 \leq x < 4 \\ 2, & x \geq 4 \end{cases}$$



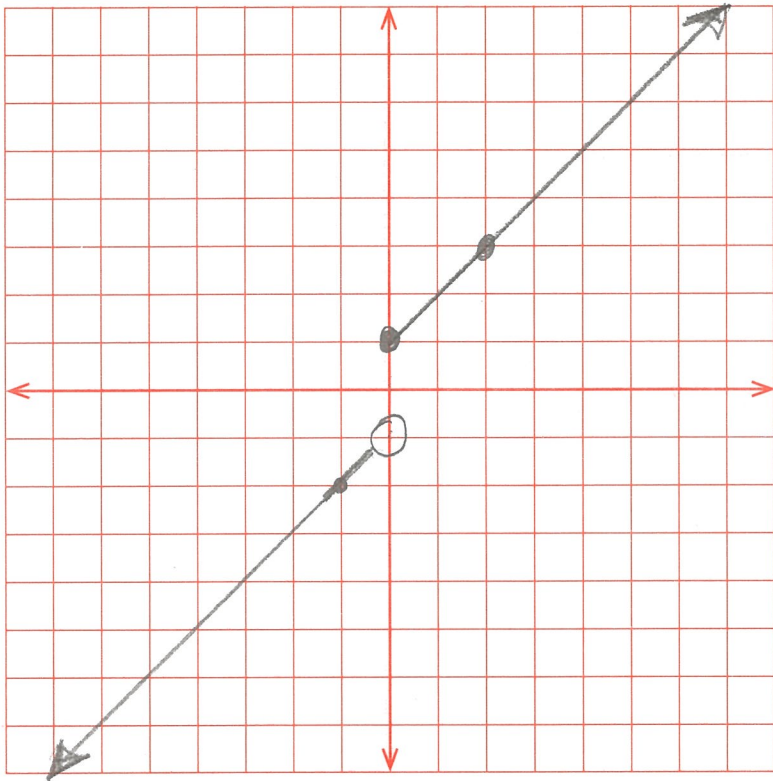
$$D: x \geq 0$$

$$R: 0 \leq y \leq 2$$

or

$$D: [0, \infty)$$

$$R: [0, 2]$$



$$\textcircled{7} f(x) = \begin{cases} x+1, & x \geq 0 \\ x-1, & x < 0 \end{cases}$$

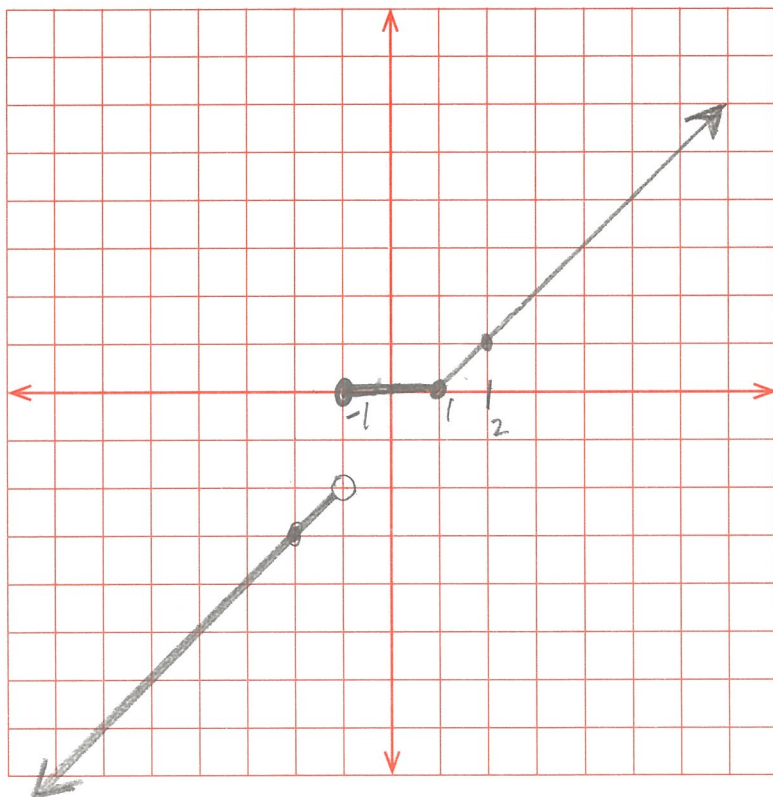
$$D: \mathbb{R}'s$$

$$R: y < -1, y \geq 1$$

or

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

$$R: (-\infty, -1) \cup [1, \infty)$$



$$\textcircled{8} f(x) = \begin{cases} 0, & |x| \leq 1 \\ x-1, & |x| > 1 \end{cases}$$

$$D: \mathbb{R}'s$$

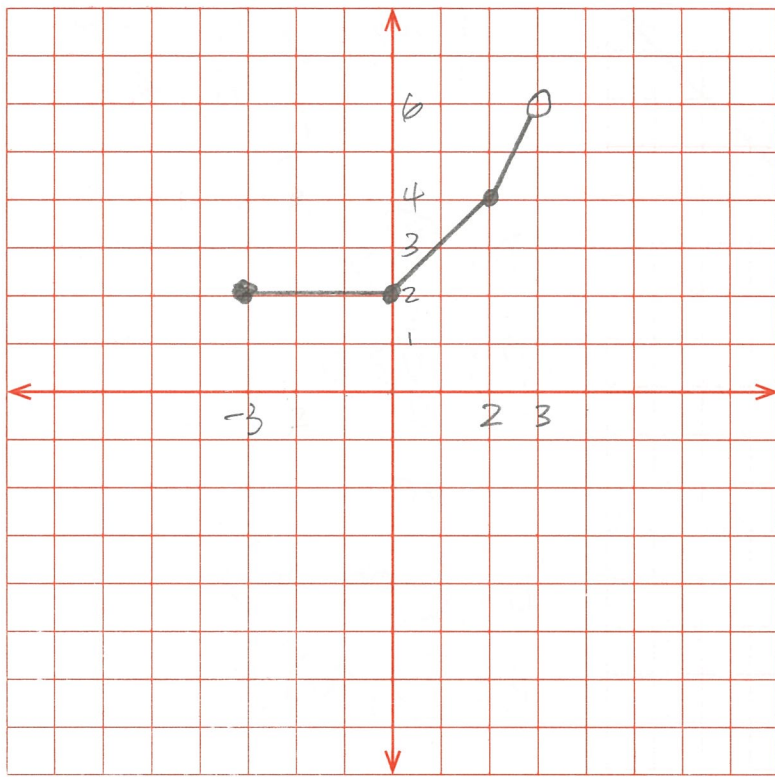
$$R: y < -2, y \geq -1$$

or

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

$$R: (-\infty, -2) \cup [0, \infty)$$

?



$$9) f(x) = \begin{cases} 2x, & 2 \leq x < 3 \\ x+2, & 0 \leq x \leq 2 \\ 2, & -3 \leq x \leq 0 \end{cases}$$

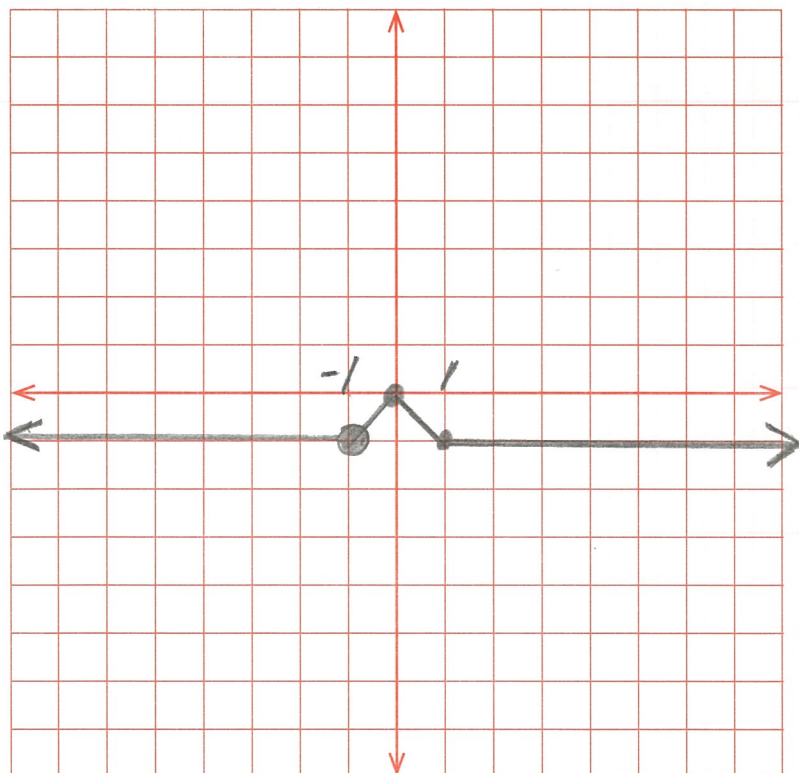
$$D: -3 \leq x < 3$$

$$R: 2 \leq y < 6$$

or

$$D: [-3, 3)$$

$$R: [2, 6)$$



$$10) f(x) = \begin{cases} -1, & x < -1 \\ -|x|, & -1 \leq x \leq 1 \\ -1, & x > 1 \end{cases}$$

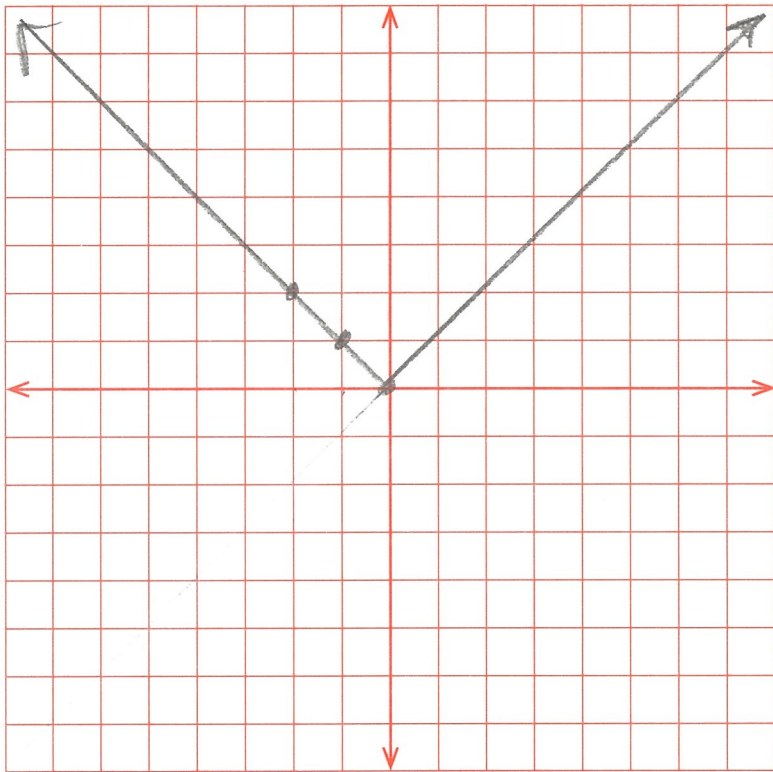
$$D: \mathbb{R}$$

$$R: -1 \leq y \leq 0$$

or

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

$$R: [-1, 0]$$



$$\textcircled{II} \quad f(x) = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

$D: \mathbb{R}'s$

$R: y \geq 0$

or

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

$R: [0, \infty)$

