

10.25.19 1st Trig

$$f(x) = 2x - 3 \quad g(x) = x^2$$

$$\textcircled{1} f(g(-3)) \quad g(-3) = (-3)^2 = 9$$
$$f(9) = 2 \cdot 9 - 3 = 15$$

$$\textcircled{2} g(f(x))$$
$$g(2x-3) = (2x-3)^2$$
$$= (2x-3)(2x-3)$$
$$4x^2 - 12x + 9$$

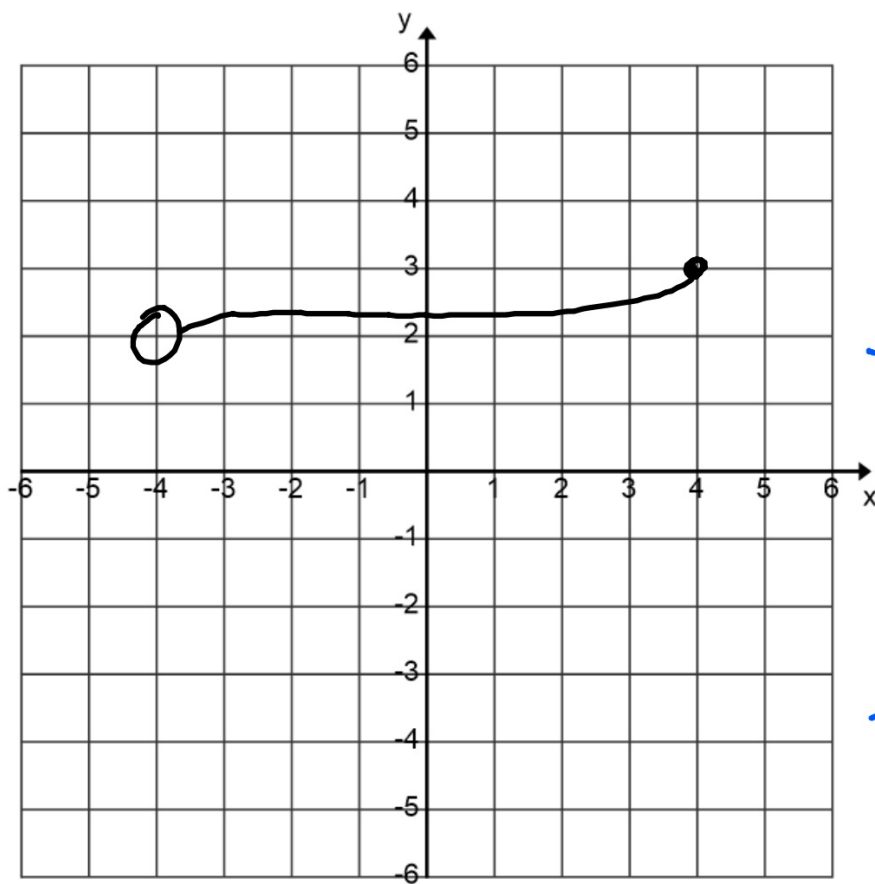
$\textcircled{3}$ Give the inverse of
 $f(x) = -8x + 3$

$$y = -8x + 3$$
$$x = -8y + 3$$
$$\begin{array}{r} x = -8y + 3 \\ -3 \quad -3 \\ \hline x - 3 = -8y \\ -8 \quad -8 \end{array}$$
$$f^{-1}(x) = \frac{x-3}{-8}$$

$\textcircled{4}$ Domain of $f(x) = \sqrt{x+4}$

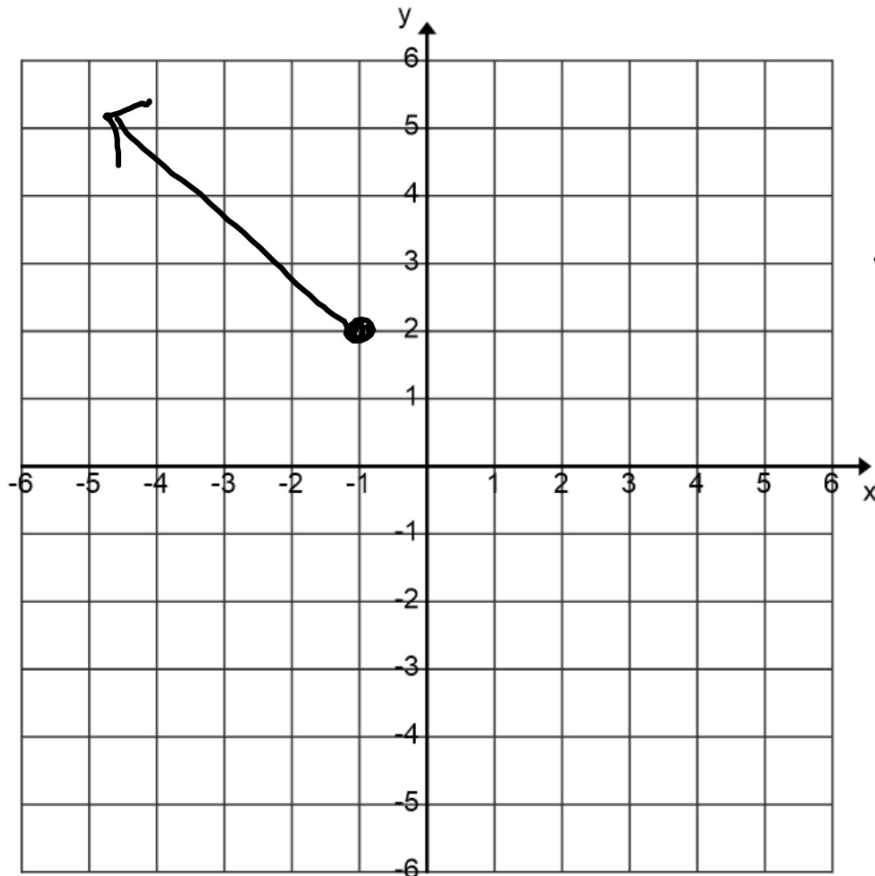
$$x+4 \geq 0$$
$$\begin{array}{r} x+4 \geq 0 \\ -4 \quad -4 \\ \hline \mathbb{R}: x \geq -4 \end{array}$$

$\textcircled{5}$ Domain of $f(x) = 3x - 6$
 \mathbb{R}



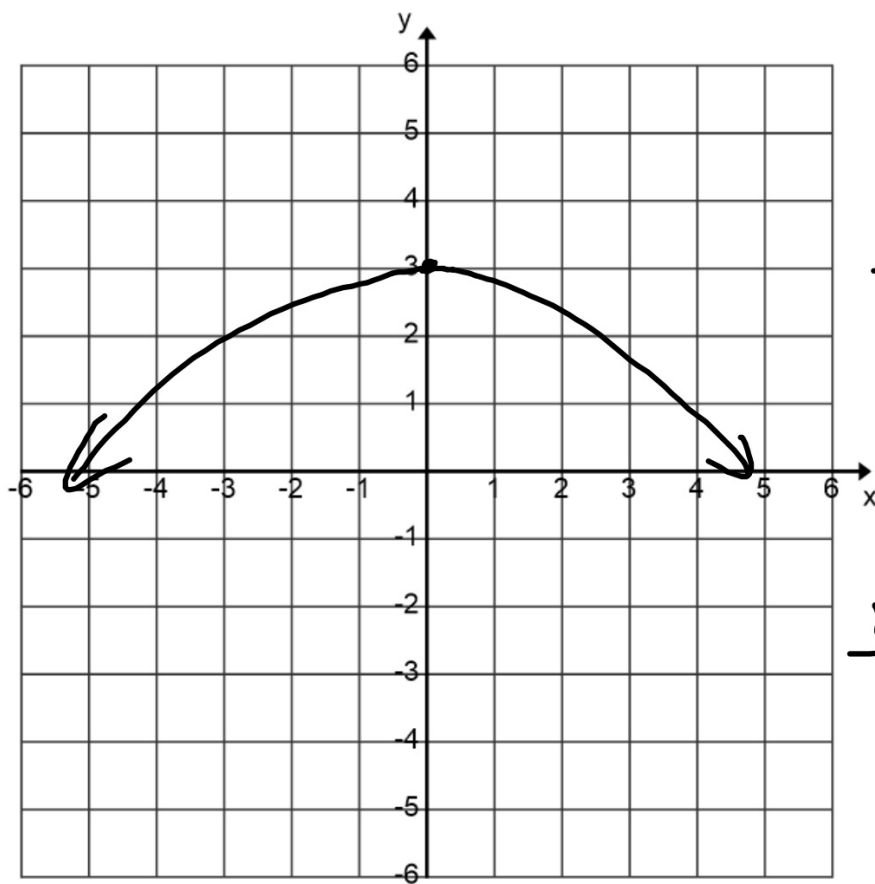
Domain
 $-4 < x \leq 4$

Range
 $2 < y \leq 3$



Domain
 $x \leq -1$

Range
 $y \geq 2$

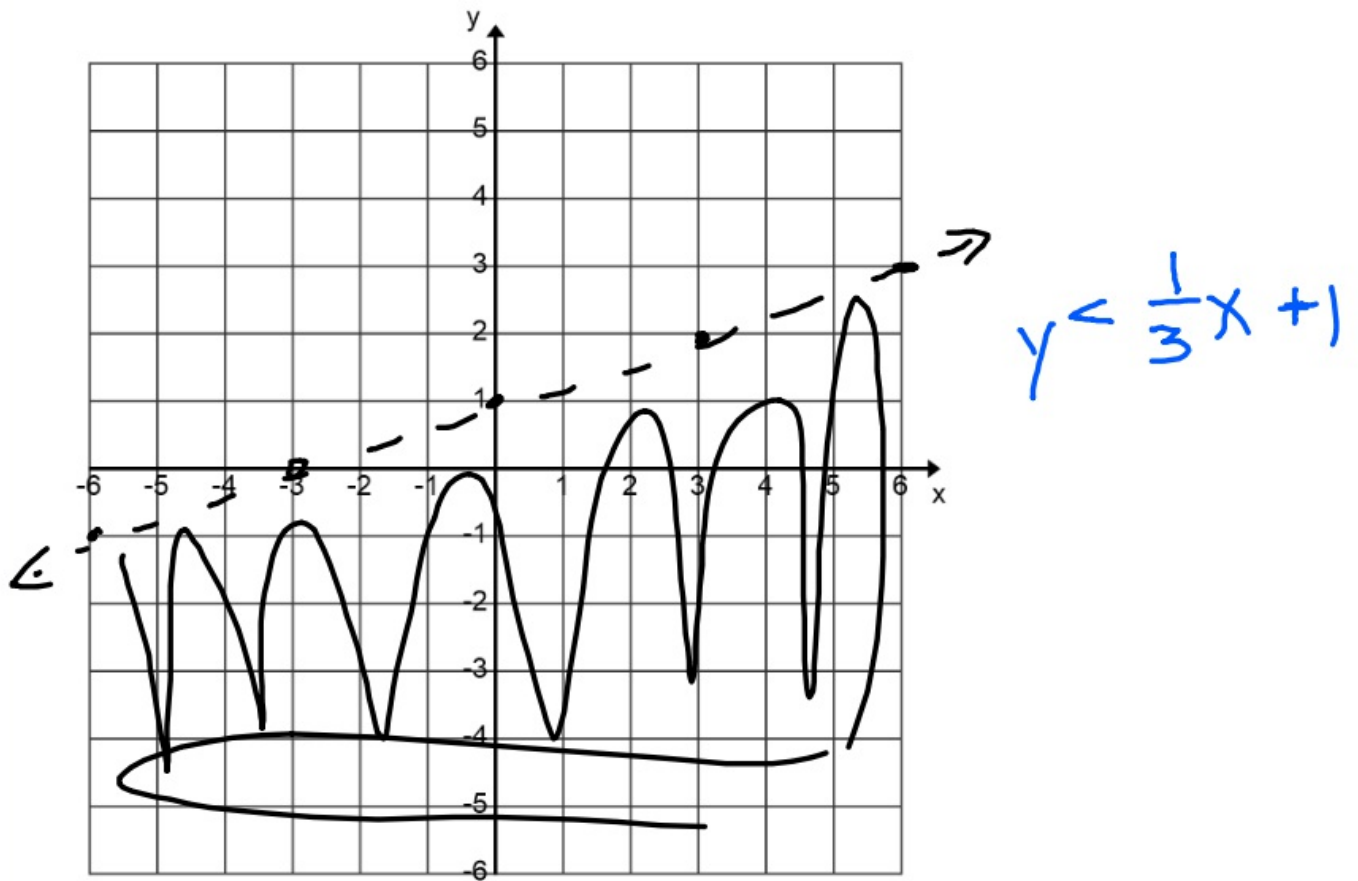


Domain


\mathbb{R}

Range

$y \leq 3$




⑩ Interval notation for

a.) $x > 5$ 
 $(5, \infty)$

b.) $-3 \leq x < 10$
 $[-3, 10)$

c.) $x \leq 8$


 $(-\infty, 8]$

10-25-19 3rd Trig

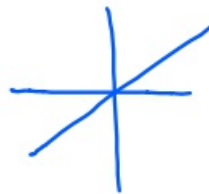
$$f(x) = 2x + 5 \quad g(x) = x^2$$

① $f(g(-3))$ $g(-3) = (-3)^2$
↓
 $f(9) = 2 \cdot 9 + 5 = 9$
 $= 23$

② $g(f(x))$
↓
 $g(2x+5) = (2x+5)^2$
 $(2x+5)(2x+5)$
 $4x^2 + 20x + 25$

③ Give the inverse of $f(x) = 3x - 1$

$$\begin{array}{r} y = 3x - 1 \\ x = 3y - 1 \\ \hline +1 \quad +1 \\ \hline \frac{x+1}{3} = \frac{3y}{3} \end{array}$$



$$f^{-1}(x) = \frac{x+1}{3}$$

④ Domain of $f(x) = 3x - 6$
 \mathbb{R}


⑤ Domain $f(x) = \sqrt{3x-18}$

$$\begin{array}{r} 3x-18 \geq 0 \\ +18 \quad +18 \\ \hline 3x \geq 18 \\ \frac{3x}{3} \geq \frac{18}{3} \end{array}$$


Ans: $x \geq 6$

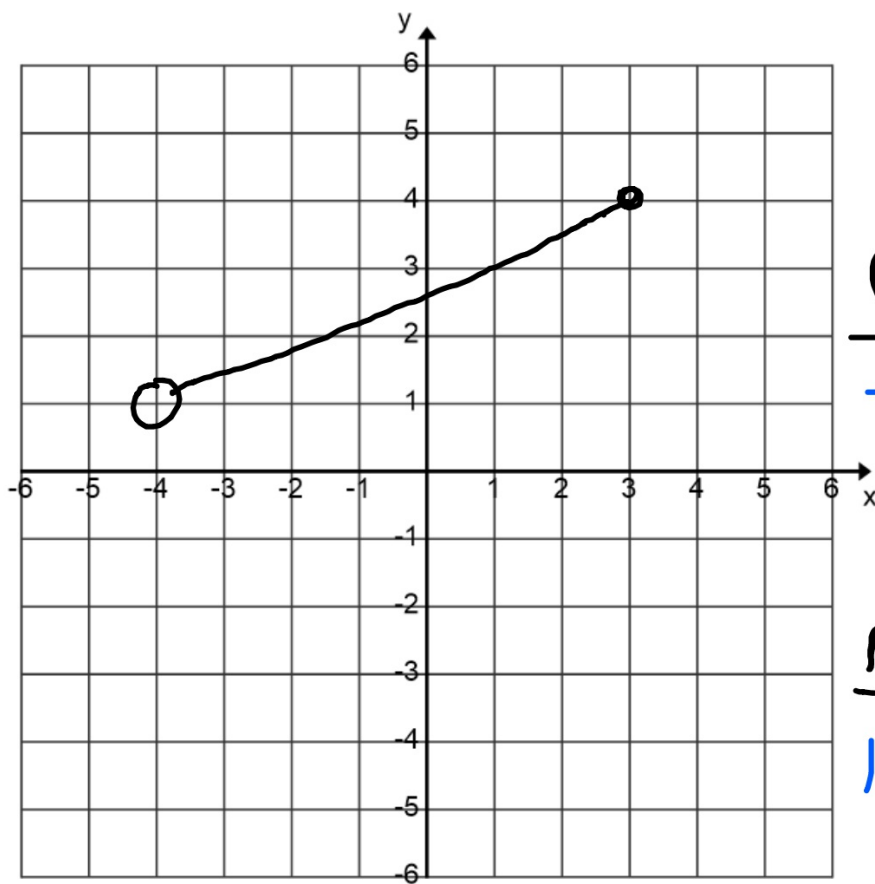
⑥ Interval notation

a.) $2 \leq x < 5$ $[2, 5)$

b.) $x \geq 10$ 
 $[10, \infty)$

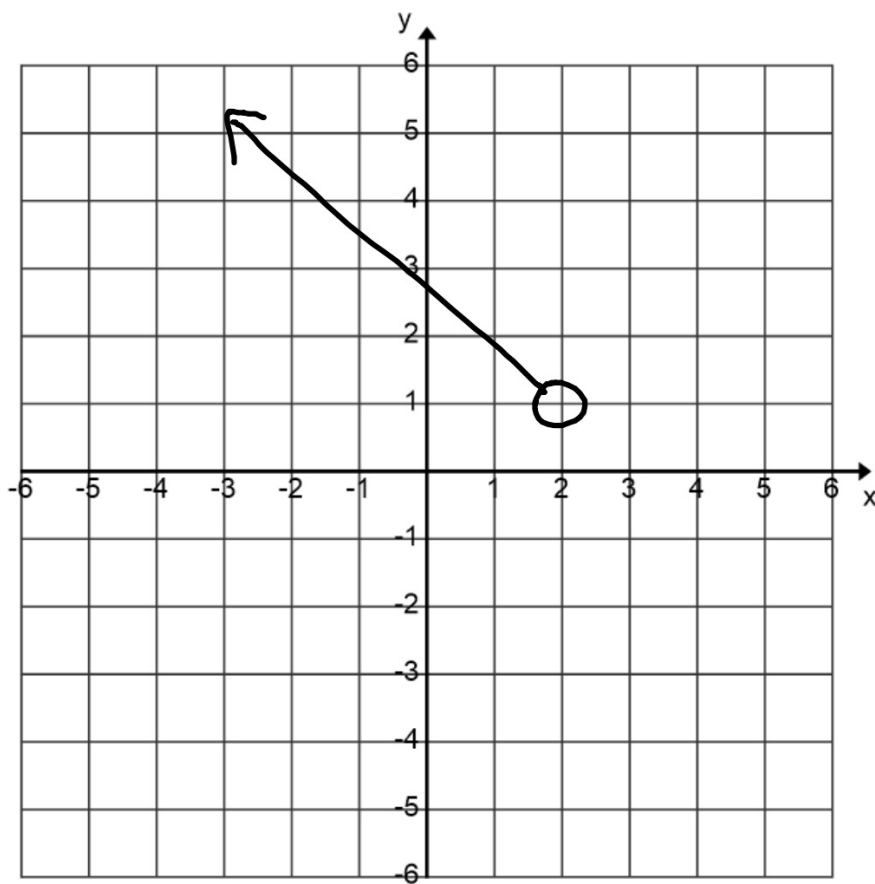
c.) $x < 8$


 $(-\infty, 8)$



Domain
 $-4 < x \leq 3$

Range
 $1 < y \leq 4$

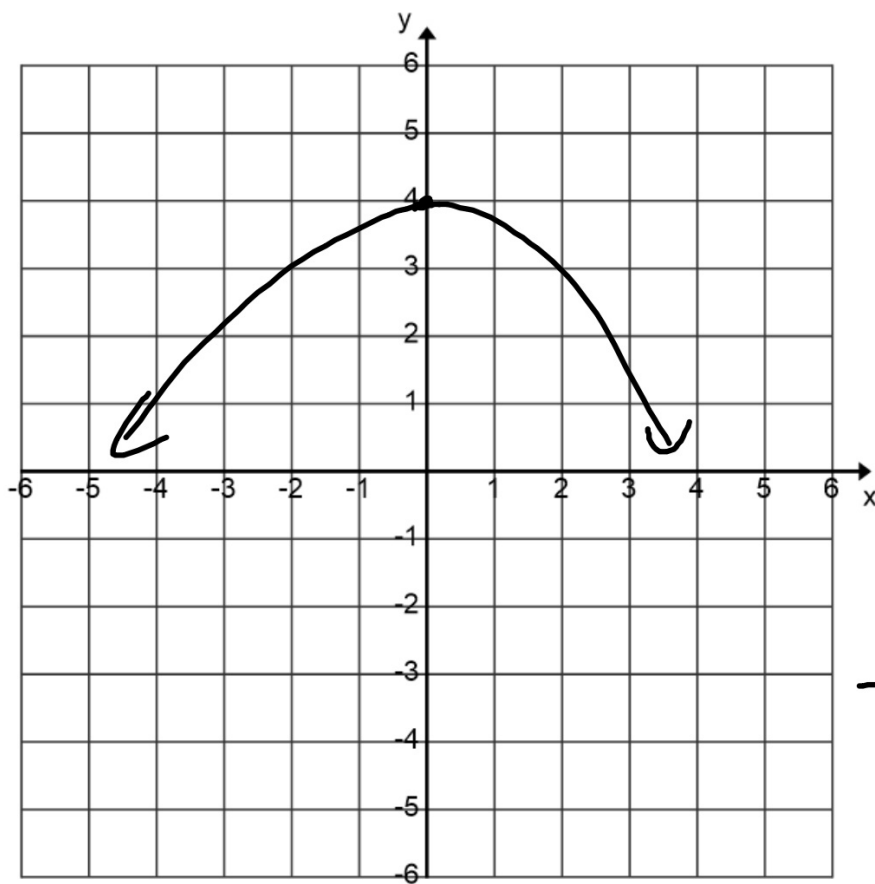


Domain

$$x < 2$$

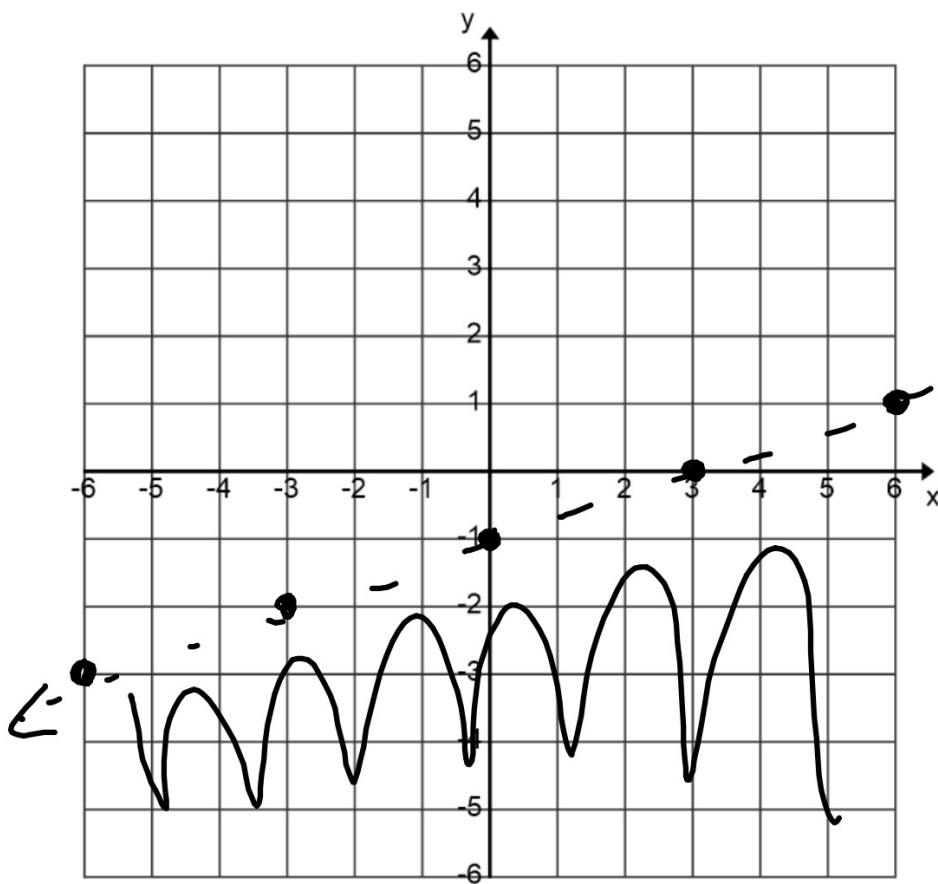
Range

$$y > 1$$



Domain
 \mathbb{R}

Range
 $y \leq 4$



$$y < \frac{1}{3}x - 1$$

10-25-19 4th Trig

$$f(x) = 3x + 1$$

$$g(x) = x^2$$

① $f(g(-2))$

$$g(-2) = (-2)^2$$

$$f(4) = 3 \cdot 4 + 1$$

$$= 4$$

$$= 13$$

② $g(f(x))$

$$g(3x+1) = (3x+1)^2$$

$$(3x+1)(3x+1)$$

$$9x^2 + 6x + 1$$

③ Give the inverse of
 $f(x) = 8x - 5$.

$$y = 8x - 5$$

$$x = 8y - 5$$

$$\begin{array}{r} +5 \quad +5 \\ \hline \end{array}$$

$$\frac{x+5}{8} = \frac{8y}{8}$$

$$f^{-1}(x) = \frac{x+5}{8}$$



④ Domain $f(x) = \sqrt{x+7}$

$$x+7 \geq 0$$


$$\begin{array}{r} -7 \quad -7 \\ \hline \end{array}$$

$$\mathbb{R}: x \geq -7$$

⑤ Domain $f(x) = 2x - 8$
 \mathbb{R}

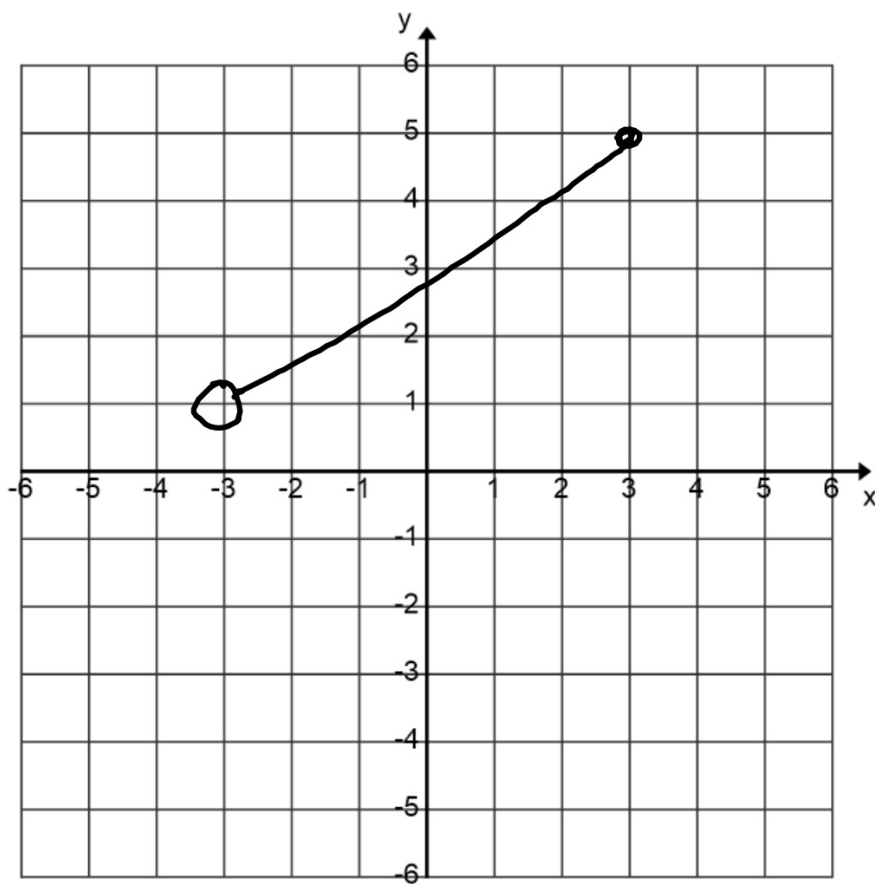
⑥ Give answers in Interval Notation

a.) $2 \leq x < 10$ $[2, 10)$

b.) $x > 100$ 
 $(100, \infty)$

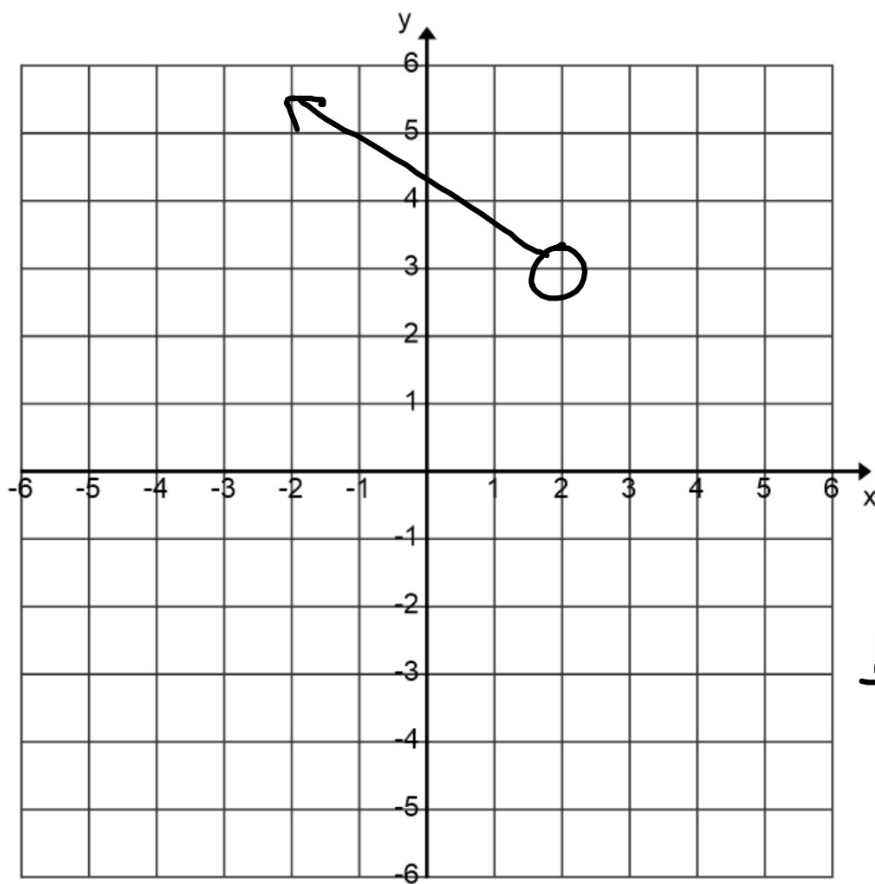
c.) $x \leq 5$


 $(-\infty, 5]$



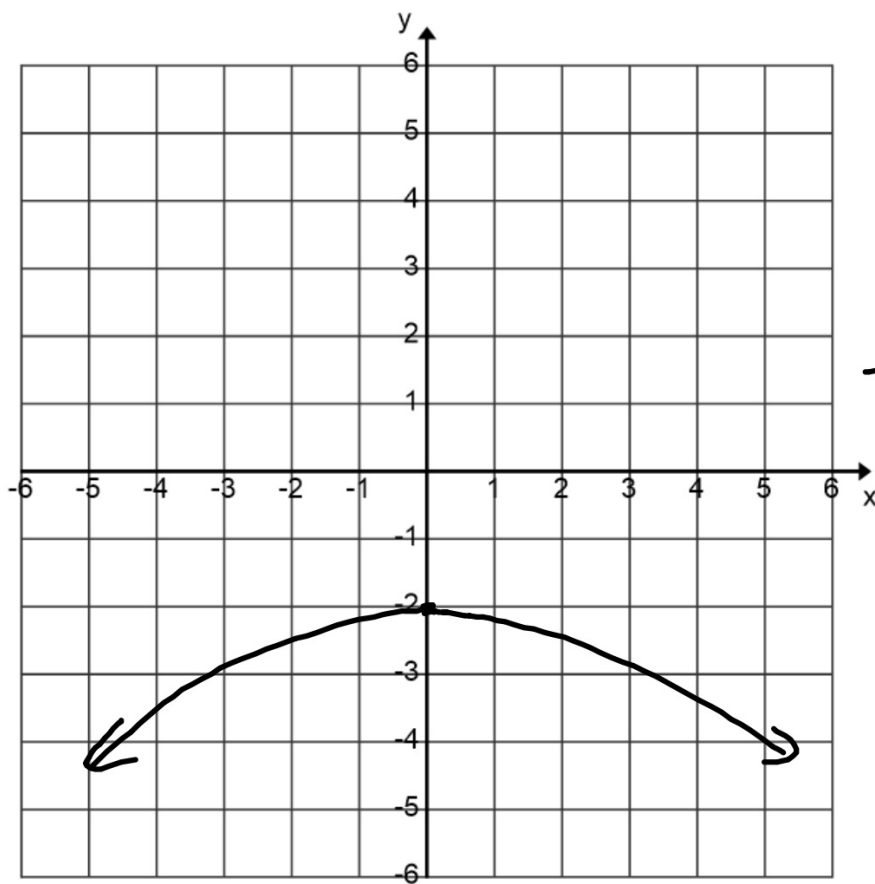
Domain
 $-3 < x \leq 3$

Range
 $1 < y \leq 5$



Domain
 $x < 2$

Range
 $y \geq 3$



Domain
 \mathbb{R}

Range
 $y \leq -2$

$$y < \frac{1}{3}x - 2$$

