

10-9-19 1<sup>st</sup> Trig

Domain

2 restrictions

fraction  $\frac{\quad}{\quad} \leftarrow \neq 0$

square root  $\sqrt{\quad} \leftarrow \geq 0$

any other problem  $\mathbb{R}$

$$\text{Ex 1: } f(x) = \frac{x^8 - 11}{3x - 5} \neq 0$$
$$\frac{\quad}{+5 \quad +5}$$
$$\frac{3x - 5}{3} \neq \frac{5}{3}$$
$$\mathbb{R} \text{ except } x \neq \frac{17}{3}$$

$$\text{Ex 2: } f(x) = x^2 - 9$$
$$\mathbb{R}$$

$$\text{Ex 3: } f(x) = \sqrt{-2x + 4} \geq 0$$
$$\frac{\quad}{-4 \quad -4}$$
$$\frac{-2x}{-2} \geq \frac{-4}{-2}$$
$$\mathbb{R}: x \leq 2$$

$$\textcircled{20} (a^{-3}b^{-2})^{-2}$$
$$\left(\frac{1}{a^3b^2}\right)^{-1 \cdot 2}$$
$$(a^3b^2)^2$$
$$a^3b^2 \cdot a^3b^2$$
$$a^6b^4$$

$$\textcircled{35} \frac{3 \pm \sqrt{27}}{3}$$

$$\begin{array}{c} 27 \\ \swarrow \uparrow \\ \textcircled{3} \quad 9 \\ \quad \swarrow \downarrow \\ \quad \textcircled{3} \quad \textcircled{3} \\ \swarrow \downarrow \downarrow \\ 3 \sqrt{\textcircled{3} \cdot \textcircled{3} \cdot 3} \end{array}$$

$$\frac{3 \pm 3\sqrt{3}}{3}$$

$$1 \pm \sqrt{3}$$

$$f(x) = 3x + 7$$

$$f(5x-1) = 3 \cdot \boxed{5x-1} + 7$$

$$15x - 3 + 7$$

$$15x + 4$$

$$f(x) = 2x + 10 \quad g(x) = 4x - 1$$

$$f(\boxed{g(x)})$$

$$f(\downarrow 4x-1) = 2 \cdot \boxed{4x-1} + 10$$

$$8x - 2 + 10$$

$$8x + 8$$

$$f(x) = 3x - 2$$

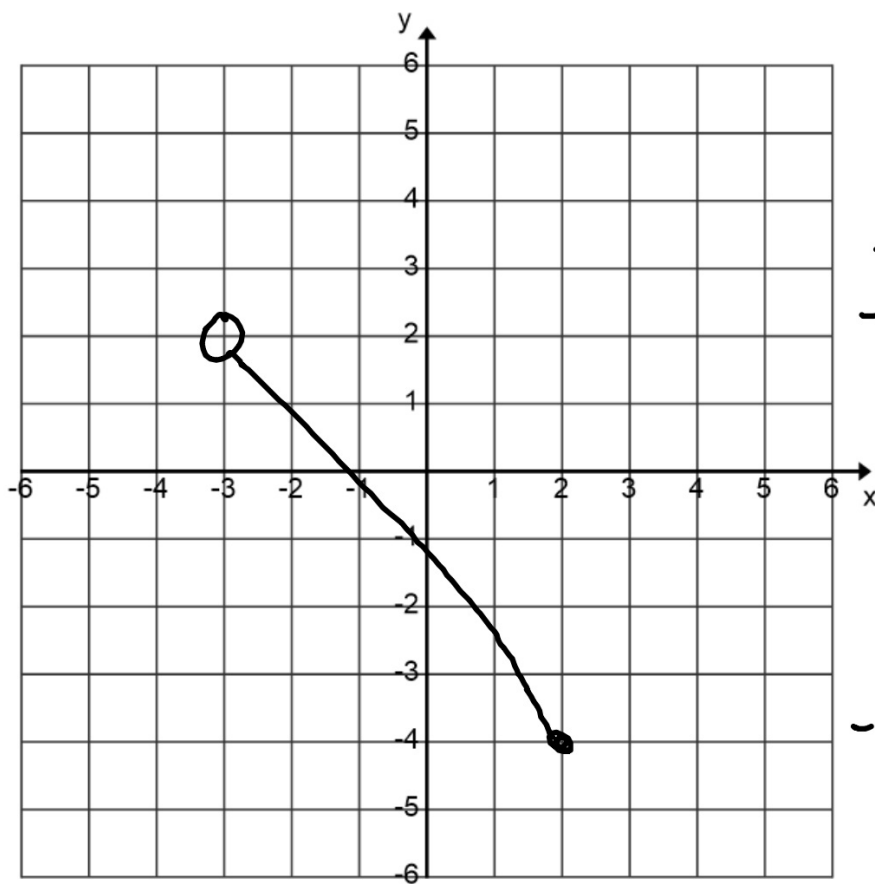
$$f(\boxed{f(x)}) =$$

$$f(\downarrow 3x-2) = 3 \cdot \boxed{\phantom{3x-2}} - 2$$

$$3(3x-2) - 2$$

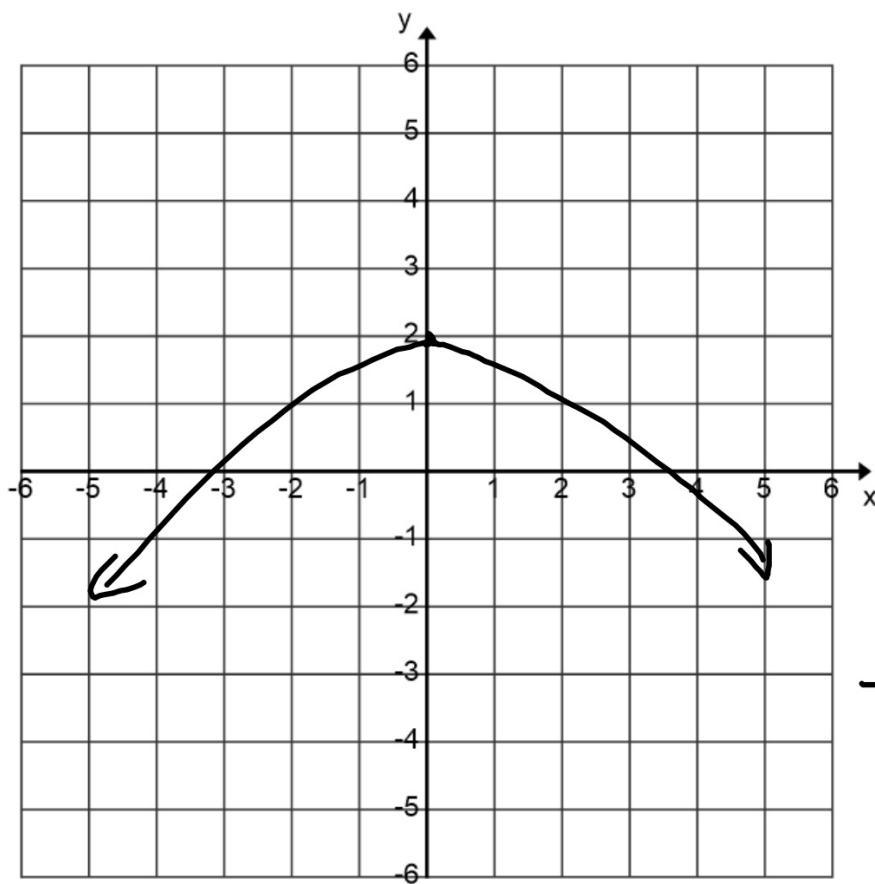
$$9x - 6 - 2$$

$$9x - 8$$



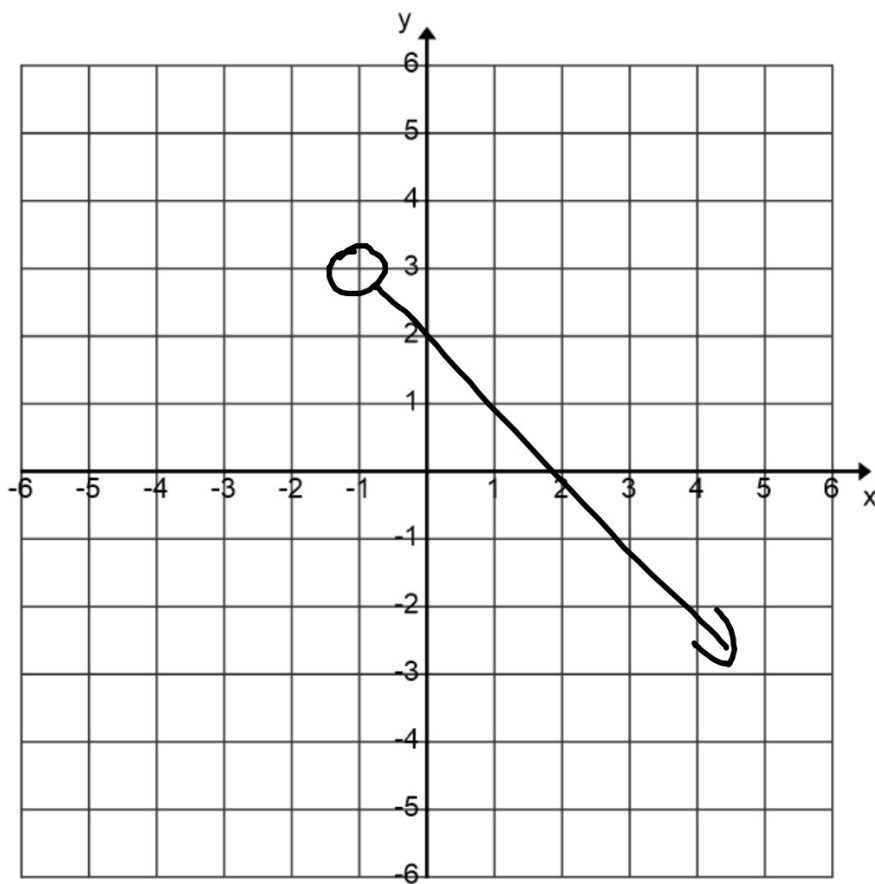
Domain  
 $-3 < x \leq 2$

Range  
 $-4 \leq y < 2$



Domain  
 $\mathbb{R}$

Range  
 $y \leq 2$



Domain  
 $x > -1$

Range  
 $y < 3$

10-9-19 3<sup>rd</sup> Trig

$$f(x) = \underline{\hspace{2cm}} \neq 0$$

$$f(x) = \sqrt{\underline{\hspace{2cm}}} \geq 0$$

$$f(x) = \mathbb{R}$$

$$\textcircled{1} f(x) = \sqrt{-2x-4}$$

$$\begin{array}{r} -2x-4 \geq 0 \\ +4 \quad +4 \\ \hline -2x \geq 4 \\ \frac{-2x}{-2} \geq \frac{4}{-2} \\ x \leq -2 \end{array}$$

$$\textcircled{2} f(x) = \frac{x^8}{3x-5}$$

$$\begin{array}{r} \textcircled{|||} || \quad 3x-5 \neq 0 \\ \quad \quad \quad +5 \quad +5 \\ \hline \quad \quad \quad \frac{3x+5}{3} \\ \quad \quad \quad x \neq 1\frac{2}{3} \end{array}$$

$$\frac{11}{5} = 2\frac{1}{5}$$

$$\textcircled{|||} \textcircled{|||} |$$

$$\textcircled{3} f(x) = 5x-10$$

Review packet

$$\textcircled{53} f(x) = 4x-5$$

$$f(f(x))$$

$$\begin{array}{l} \downarrow \\ f(4x-5) = 4 \cdot \boxed{4x-5} - 5 \\ \quad \quad \quad 16x-20-5 \\ \quad \quad \quad 16x-25 \end{array}$$

$$50. f(x) = -3x^2$$

$$f(-2) = -3 \cdot (-2)^2$$

$$\cdot 3 \cdot 4$$

$$-12$$

$$(44) (3n^2y^4)^2 + n(n^4)y^3 \cdot y^5$$

$$3n^2y^4 \cdot 3n^2y^4 + n \cdot nnnn yyy yyy$$

$$3nnnyyy \cdot 3nnnyyy + n^5y^8$$

$$9n^4y^8 + n^5y^8$$

$$(8) (x+2)(2x^2+5x+1)$$

$$2x^3 + 5x^2 + x + 4x^2 + 10x + 2$$

$$2x^3 + 9x^2 + 11x + 2$$

$$(40) \sqrt{-80a^2}$$

$$80 a^2 \cdot i \sqrt{(-1) 2 \cdot 2 2 \cdot 2 5 a \cdot a}$$

$$4a i \sqrt{5}$$

$$\textcircled{38} \quad 8x^3 - 27y^3$$

$$(2x - 3y) \overset{S O F A S}{(4x^2 + 6xy + 9y^2)}$$

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$$f(x) = 2x + 8$$

$$f(x^2 + 3x - 1) = 2 \cdot \boxed{(x^2 + 3x - 1)} + 8$$

$$2x^2 + 6x - 2 + 8$$

$$2x^2 + 6x + 6$$

$$f(x) = 5x - 1$$

$$g(x) = 3x + 10$$

$$f(\boxed{g(x)}) =$$

$$\downarrow$$
$$f(3x + 10) = 5 \cdot \boxed{(3x + 10)} - 1$$

$$15x + 50 - 1$$

$$15x + 49$$

$$f(x) = -3x - 2$$

$$g(x) = -2x + 100$$

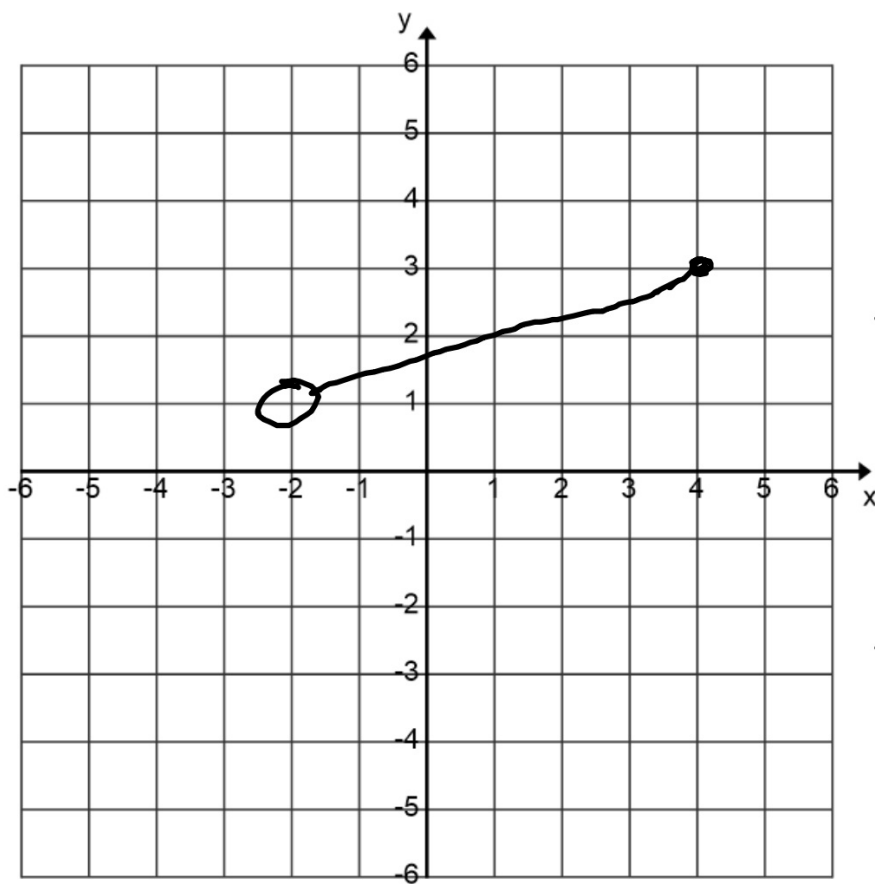
$$g(\boxed{f(x)})$$

$$\downarrow$$
$$g(-3x - 2) = -2(-3x - 2) + 100$$

$$6x + 4 + 100$$

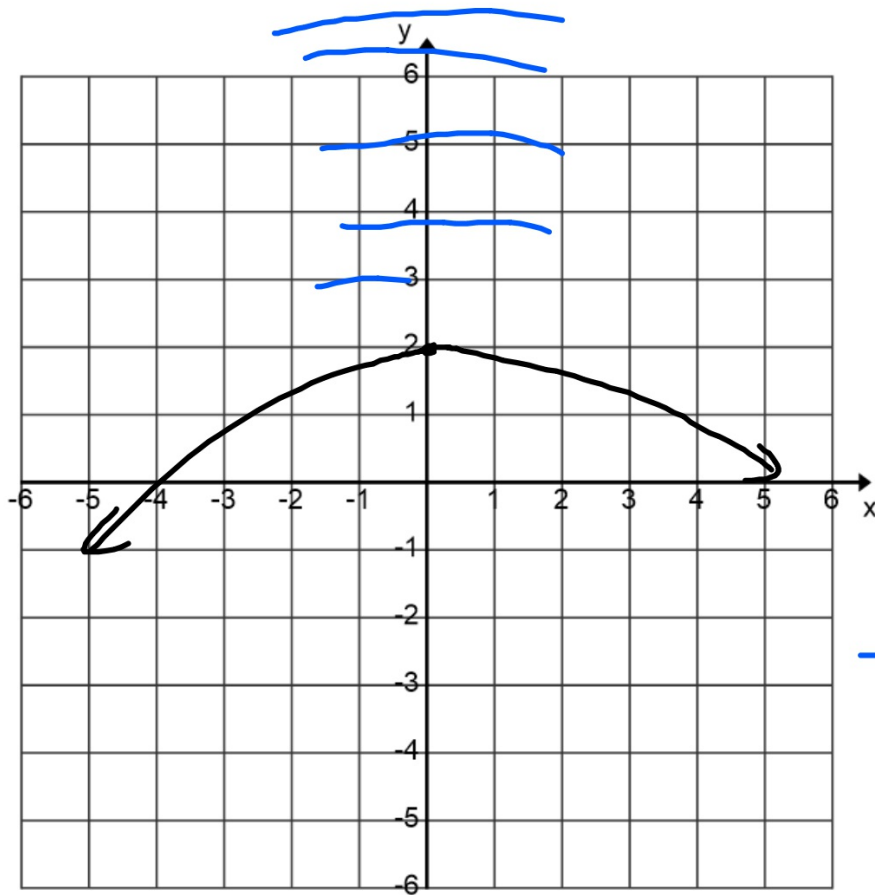
$$6x + 104$$





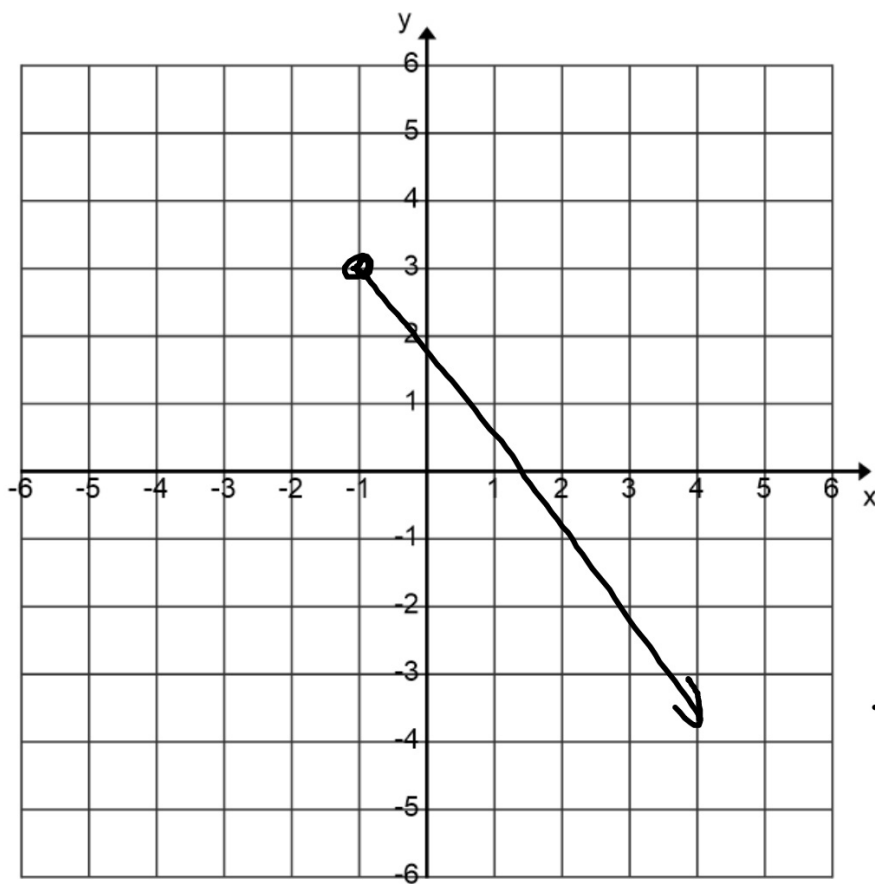
Domain  
 $-2 < x \leq 4$

Range  
 $1 < y \leq 3$



Domain  
 $\mathbb{R}$

Range  
 $y \leq 2$



Domain

$$x \geq -1$$

Range

$$y \leq 3$$