Kickoff

Find the equation of the line that is normal to the line 2y + 4x -8 =0 and passes through the point (-2, 3) in general form.

$$2y + 4x - 8 = 0$$
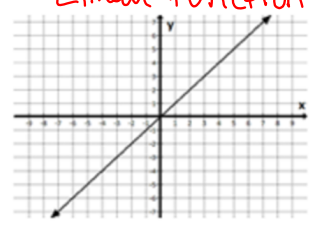$$-4x + 8 \qquad -4x + 8$$

$$M = \frac{1}{2}$$

$$Y - Y_1 = m(x - x_1)$$

$$\frac{2y}{2} = \frac{-4x}{2} + \frac{8}{2}$$

$$Y - 3 = \frac{1}{2}(x+2)$$

$$Y = -2x + 4$$

$$Y - 3 = \frac{1}{2}x + 1$$

$$-\frac{1}{2}x - 1 \quad -\frac{1}{2}x - 1$$

$$Y - \frac{1}{2}x - 4 = 0$$

Quiz Review

⑧
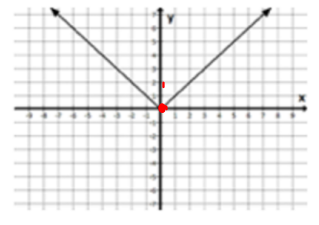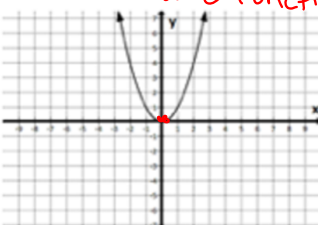
a) $k(x) = \frac{2x}{x^2 - 16}$
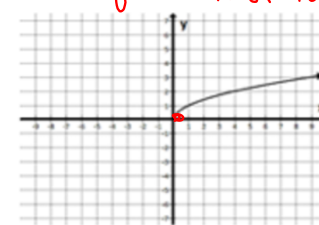
$$x^2 - 16 = 0$$
$$+16 \quad +16$$
$$\sqrt{x^2} = \sqrt{16}$$
$$x = \pm 4$$

$\mathbb{R}$ except
$x = \pm 4$

b) $m(x) = \frac{2x}{\sqrt{3x-5}}$

$$3x - 5 > 0$$
$$+5 \quad +5$$
$$\frac{3x}{3} > \frac{5}{3}$$
$$x > \frac{5}{3}$$

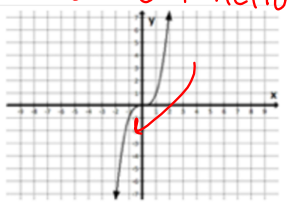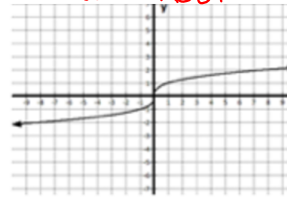
Name : **Linear Function**

Function: $Y = X$

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

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

Even/Odd/Neither: **Odd**

Name : **Absolute Value Function**

Function: $Y = |x|$

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

Range: $[0, \infty)$

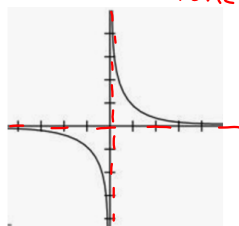Even/Odd/Neither: **even**

Vertex: $(0, 0)$

Name : **Quadratic Function**

Function: $Y = x^2$

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

Range: $[0, \infty)$

Even/Odd/Neither: **even**

Vertex: $(0, 0)$

Name : **Square Root Function**

Function: $Y = \sqrt{x}$

Domain: $[0, \infty)$

Range: $[0, \infty)$

Even/Odd/Neither: **neither**

Vertex: $(0, 0)$

Name : *Cubic Function*

Function: $y = x^3$

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

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

Even/Odd/Neither: *Odd*

Vertex: $(0,0)$

Name : *Cube Root*

Function: $y = \sqrt[3]{x}$

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

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

Even/Odd/Neither: *Odd*

Vertex: $(0,0)$

Name : *Rational Function*

Function: $y = \frac{1}{x}$

Domain: $(-\infty, 0) \cup (0, \infty)$

Range: $(-\infty, 0) \cup (0, \infty)$

Even/Odd/Neither: *Odd*

Rigid Transformations- *transformations that don't change shape or size of the function.*

Horizontal Shifts – right or left

$f(x \pm h)$ *★ changes x* $f(x+h)$ $f(x-h)$

★Opposites ☺   LEFT   RIGHT

Vertical Shifts – up or down

$f(x) \pm k$ *★change y!*

     $f(x)+k$ $f(x)-k$

     UP   down

Reflections:

Reflection over y-axis

$f(-x)$ ex: $\sqrt{-x}$

Reflection over x-axis

$-f(x)$ ex: $-\sqrt{x}$

Describe the transformations.

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

   right 1
   up 5

2) $-h(x+2) + 3$

   reflecting over the x-axis
   left 2
   up 3

Write the function for the following:

3) A cubic function that has a horizontal shift right 3 and then reflects over the x- axis and then shifts down 4 units.

$$f(x) = -(x-3)^3 - 4 \qquad \text{Vertex} \quad (3,-4)$$

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

4) A square root function that has a horizontal shift left 2 and then reflects over the y- axis and then shifts up 6 units.

Vertex
$(-2, 6)$

$$f(x) = \sqrt{-x+2} + 6$$

$$D: (-\infty, 2]$$