

## Today's Learning Goal(s):

Date: \_\_\_\_\_  
(Every lesson)

By the end of the class, I will be able to:

- a) apply all transformations to the parent functions.

Last day's Assigned Practice: **READ pp.61-69**

p. 70 #1 - 3, 4abc, 5ab

1968 At the Grammy Awards, the Best Female R&B Vocal Performance category is given for the first time, and Aretha Franklin wins it for "Respect." She wins the award again each of the next seven years.

↳ last

3. Complete the table for the point (1, 1).

p. 70 #3

$f(x)$	$f(3x)$	$f(-3x)$	$5f(-3x)$	$5f(-3(x-2))+4$
(1, 1)	( $\frac{1}{3}$ , 1)	( $-\frac{1}{3}$ , 1)	( $-\frac{1}{3}$ , 5)	( $\frac{5}{3}$ , 9)

$-\frac{1}{3} + 2$   
 $-\frac{1}{3} + \frac{6}{3}$

$$f(x) = a f(k(x-d)) + c$$

$$(x, y) \rightarrow \left(\frac{1}{k}x + d, ay + c\right) \leftarrow \begin{array}{l} \text{Mapping} \\ \text{Formula} \end{array}$$

$$\rightarrow \left(-\frac{1}{3}x + 2, 5y + 4\right)$$

$$(1, 1) \rightarrow \left(-\frac{1}{3}(1) + 2, 5(1) + 4\right)$$

$$\rightarrow \left(-\frac{1}{3} + 2, 5 + 4\right)$$

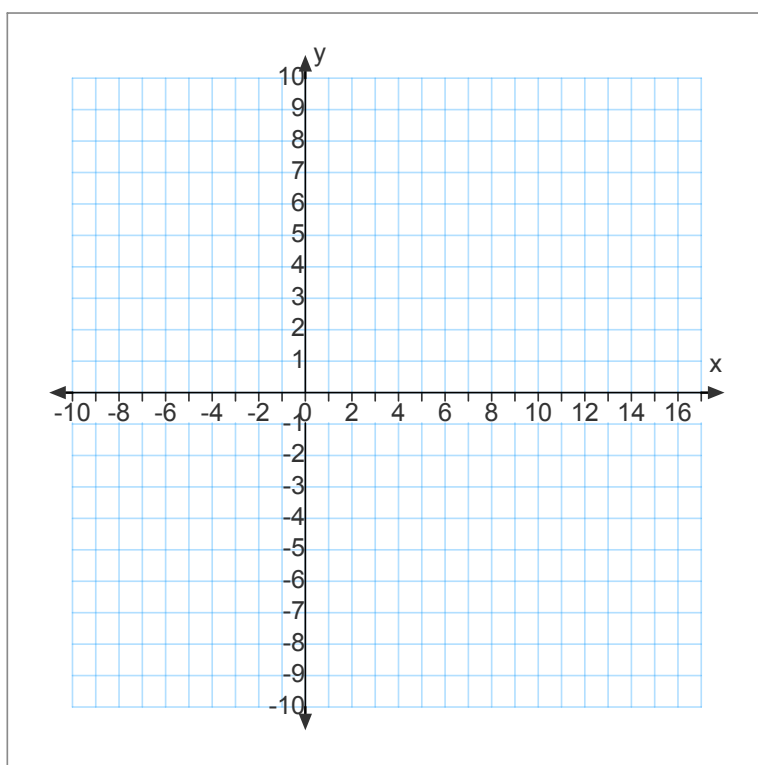
$$\rightarrow \left(-\frac{1}{3} + \frac{6}{3}, 9\right)$$

$$\rightarrow \left(\frac{5}{3}, 9\right)$$

5. Sketch each set of functions on the same set of axes.

a)  $y = x^2, y = 3x^2, y = 3(x - 2)^2 + 1$

b)  $y = \sqrt{x}, y = \sqrt{3x}, y = \sqrt{-3x}, y = \sqrt{-3(x + 1)} - 4$



## Today's Learning Goal(s):

By the end of the class, I will be able to:

- a) apply all transformations to the parent functions.

1.8 Graphing  $y=af[k(x-d)]+c$  (Day 2)

Date: Feb. 27/20  
(Every lesson)

Ex.1 The following transformations are applied to the square root function. (i.e.  $f(x) = \sqrt{x}$ )

- Horizontal stretch by a factor of 3
- Vertical stretch by a factor of 2
- Reflection in the y-axis
- Translation 5 units right and 4 units up

Write the equation for the final transformed function  $g(x)$ .

$$g(x) = 2\sqrt{-\frac{1}{3}(x-5)} + 4$$

Determine the equation for the final transformed function  $h(x)$ , under the same set of transformations, but  $f(x) = |x|$ .

$$a(x) = 2\left|-\frac{1}{3}(x-5)\right| + 4$$

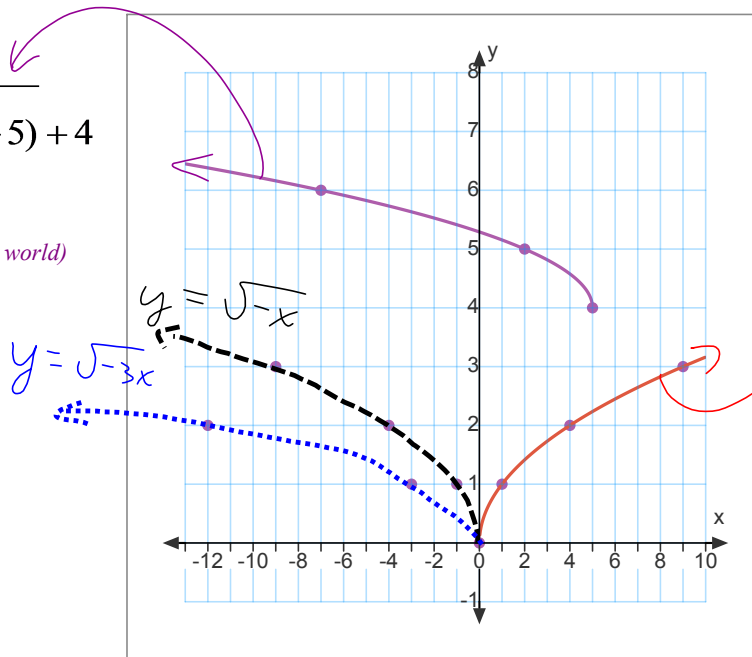
Ex.2 a) Sketch the graphs of  $f(x)$  and  $g(x)$  on the same grid.

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

$$y = \sqrt{-\frac{1}{3}(x-5) + 4} \quad y = \sqrt{x}$$

$$g(x) = \sqrt{-\frac{1}{3}(x-5) + 4}$$

(backwards world)



b) State the domain and range of both functions.

$$D_f = \{x \in \mathbb{R} \mid x \geq 0\} \quad D_g = \{x \in \mathbb{R} \mid x \leq 5\}$$

$$R_f = \{y \in \mathbb{R} \mid y \geq 0\} \quad R_g = \{y \in \mathbb{R} \mid y \geq 4\}$$

$$y = \sqrt{-\frac{1}{3}(x-5) + 4}$$

Pull

▲

Pull

Ex.3 For  $f(x) = |x|$  sketch the graph of  $g(x) = f(-5x+10) - 2$ .

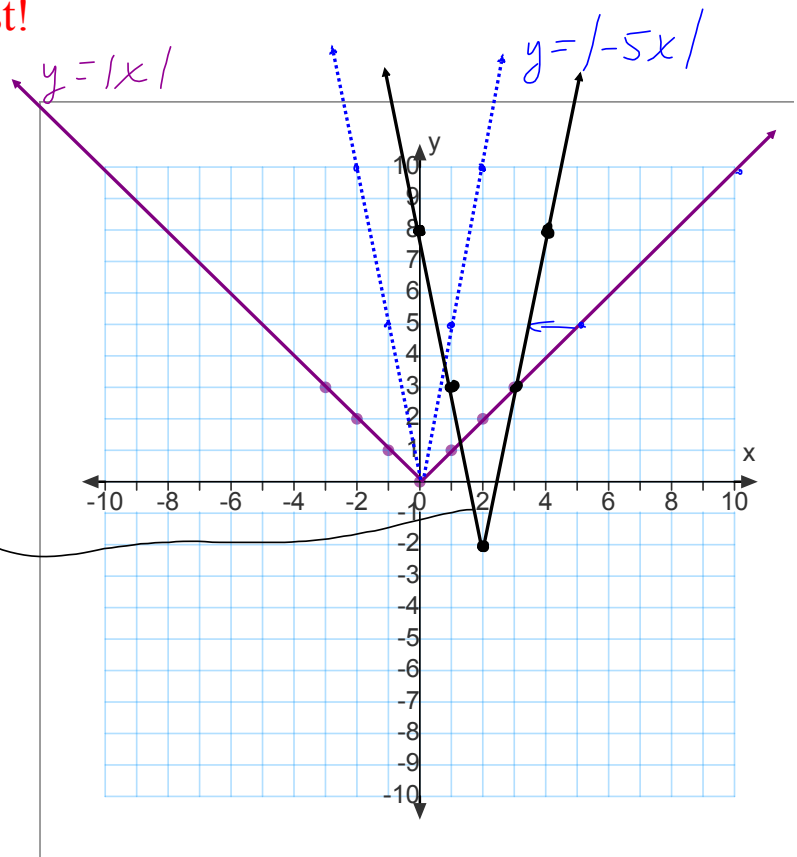
**Remember: Factor first!**

$$g(x) = |-5x+10| - 2$$

$$= |-5(x-2)| - 2$$

(backwards world)

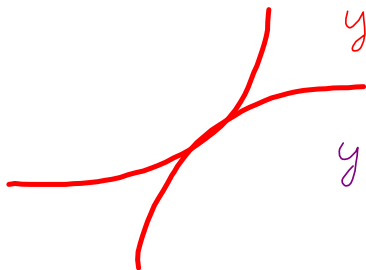
$g(x)$



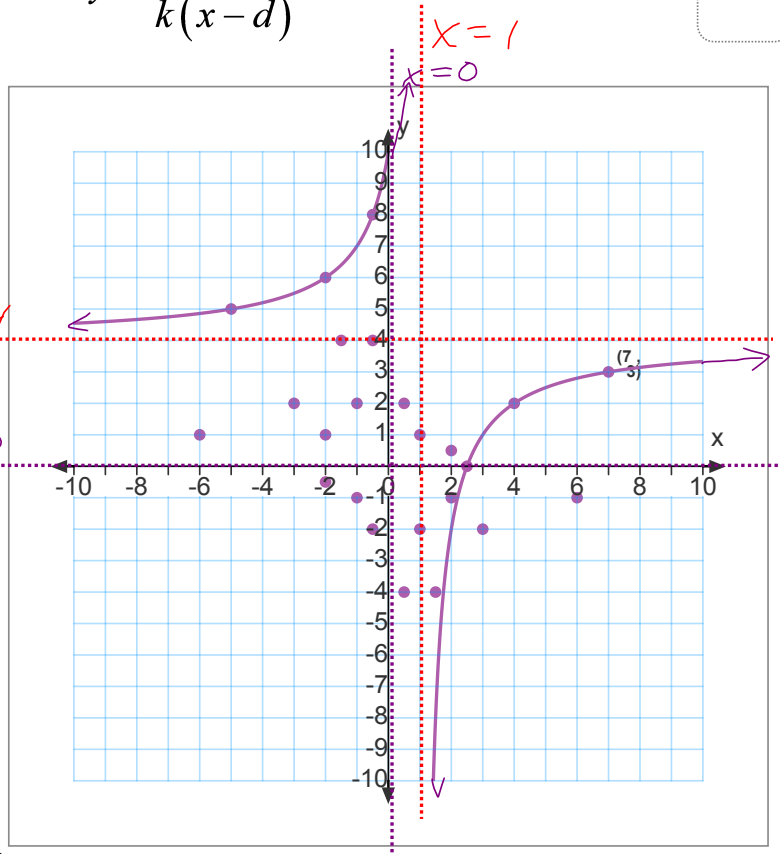
Ex.4 Graph the function.

$$y = \frac{-2}{\frac{1}{3}(x-1)} + 4$$

$$y = \frac{a}{k(x-d)} + c$$



$y=4$   
 $y=0$



one method is to map, a few key points using just  $a$  &  $k$ , then translate them.

*In general, given:  $y=af[k(x-d)]+c$*

$$( , ) \rightarrow ( , ) \quad (x, y) \rightarrow \left(\frac{1}{k}x + d, ay + c\right)$$

$y =$

Check mapping?

$$(x, y) \rightarrow (3x+1, -2y+4)$$

$$(1, 1) \rightarrow (4, 2)$$

**Are there any assigned practice questions you would like to see on the board?**

Last day's Assigned Pracce: **READ pp.61-69**  
p. 70 #1 – 3, 4abc, 5ab

Today's Assigned Practice includes:

pp. 70-71 #4def, 5cd, 6a, 7a

(Work Ahead: pp. 76-77 #1 – 5, 7, 8, 13 – 19)

