

Today's Learning Goal(s):

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

- a) apply all transformations to the parent functions.

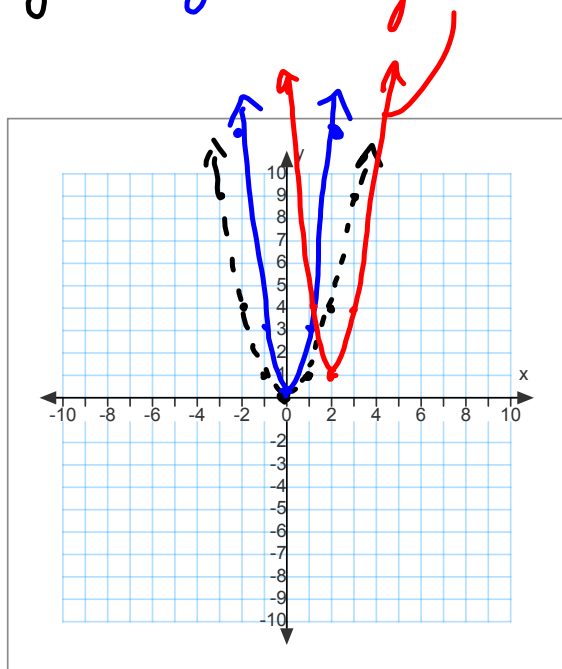
Last day's work: p. 70 #1 - 3, 4abc, 5ab

↓
x

$f(x)$	$f(3x)$	$f(-3x)$	$5f(-3x)$	$5f(-3(x-2))+4$
$(1, 1)$	$(\frac{1}{3}, 1)$	$(-\frac{1}{3}, 1)$	$(-\frac{1}{3}, 5)$	$(-\frac{1}{3}+2, 5+4)$
			$-\frac{1}{3} + \frac{6}{3}$	$(\frac{5}{3}, 9)$
				$(1\frac{2}{3}, 9)$

p.70 5a)

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



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

Date: Mar. 1/17
(Every lesson)

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

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

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

$$f(x) = af[k(x-d)]+c$$

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

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



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

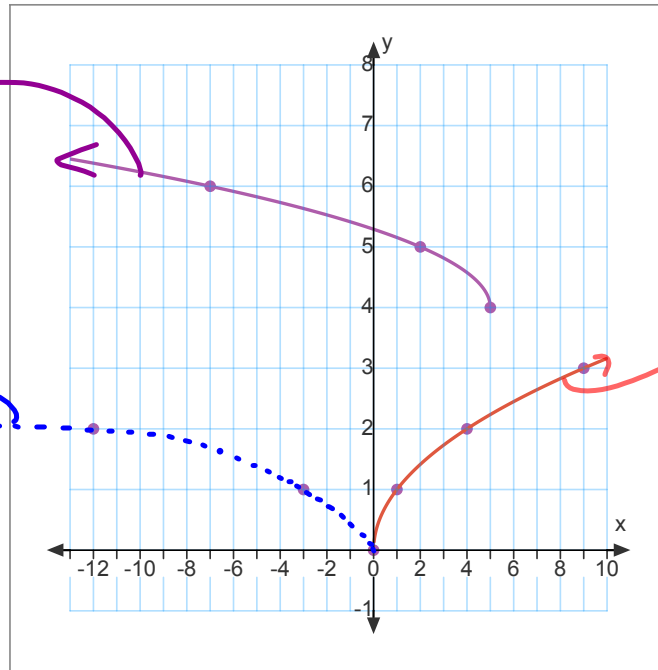
$$f(x) = \sqrt{x}$$

$$y = \sqrt{x}$$

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

(backwards world)

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



b) State the domain and range of both functions.

$f(x)$
 D: $\{x \in \mathbb{R} \mid x \geq 0\}$
 R: $\{y \in \mathbb{R} \mid y \geq 0\}$

$g(x)$
 D: $\{x \in \mathbb{R} \mid x \leq 5\}$
 R: $\{y \in \mathbb{R} \mid y \geq 4\}$

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

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

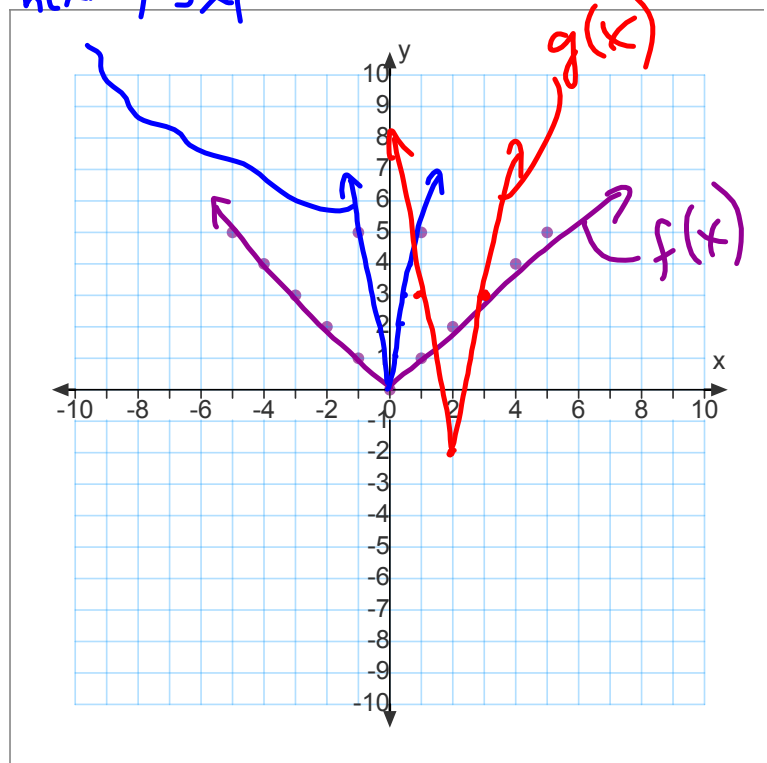
Remember: Factor first!

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

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

(backwards world)

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

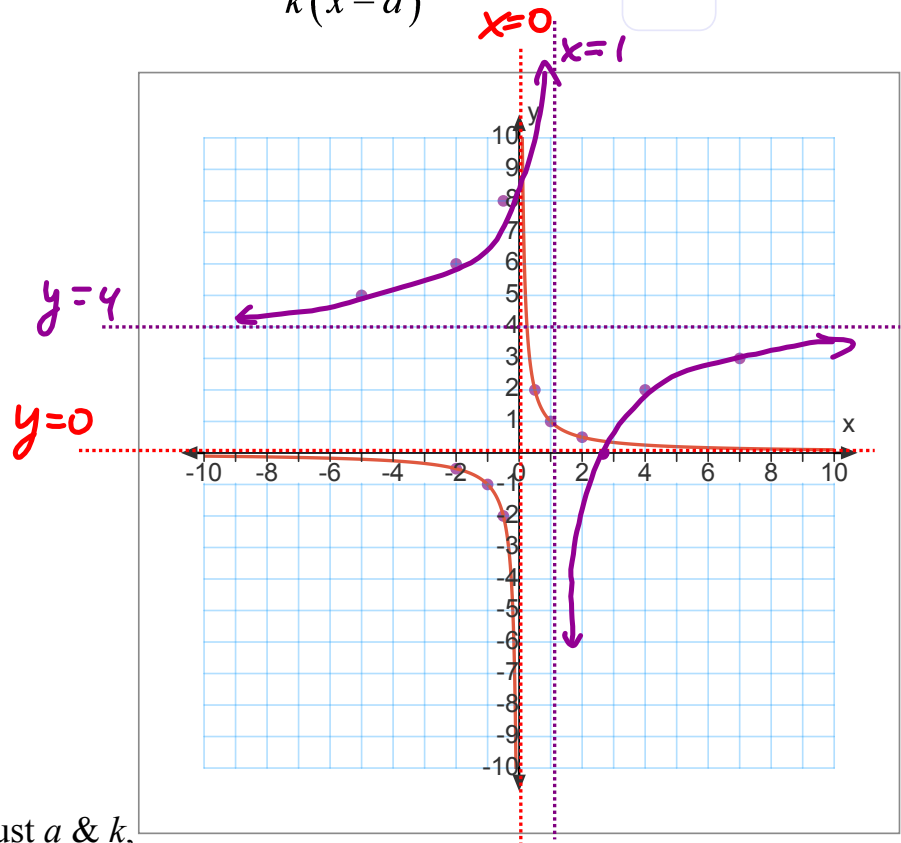


Ex.4 Graph the function.

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

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

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



$a = -2, k = \frac{1}{3}$

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

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

$(-2, -\frac{1}{2}) \rightarrow (5, 5)$

$(-2, 6)$
 Check mapping?

$(x, y) \rightarrow (3x+1, -2y+4)$
 $(2, \frac{1}{2}) \rightarrow (3(2)+1, -2(\frac{1}{2})+4) = (7, 3)$

$(\frac{1}{2}, 2) \rightarrow (3(\frac{1}{2})+1, -2(2)+4) = (\frac{3}{2}+1, -4+4) = (\frac{5}{2}, 0)$

Are there any Homework Questions you would like to see on the board?

Last day's work: p. 70 #1 – 3, 4abc, 5ab

Today's Homework Practice includes:

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