

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.38-39, 50-51 AND 52-58**

p. 51 #1 – 3

pp. 58-60 #1 – 5, 8*, 10 [14, 15]

*print "web fix" for useful points

use screen at end of lesson

1.8 Graphing $y=af[k(x-d)]+c$ (Day 1)Date: Feb. 26/20
(Every lesson)

For linear, quadratic, square root and absolute value functions:

Step 1: Know the parent function,
the significant points, and the patterns in the graph.

Step 2: Apply the reflections, stretches/compressions.

Step 3: Apply the translations.

RST

Note: The reciprocal function has asymptotes
which must be considered when applying this process.

For reciprocal functions:

Step 3R: Lightly sketch in the translated asymptotes.

Step 4R: Sketch in the TRANSLATED function
being careful not to cross the asymptotes.

Recall: The k value is a stretch or compression,
but it is opposite of what you might think by the numbers.

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


 (backwards world)

Ex.1

$$y = \sqrt{x}$$

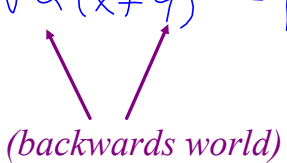
$$y = -3\sqrt{x}$$

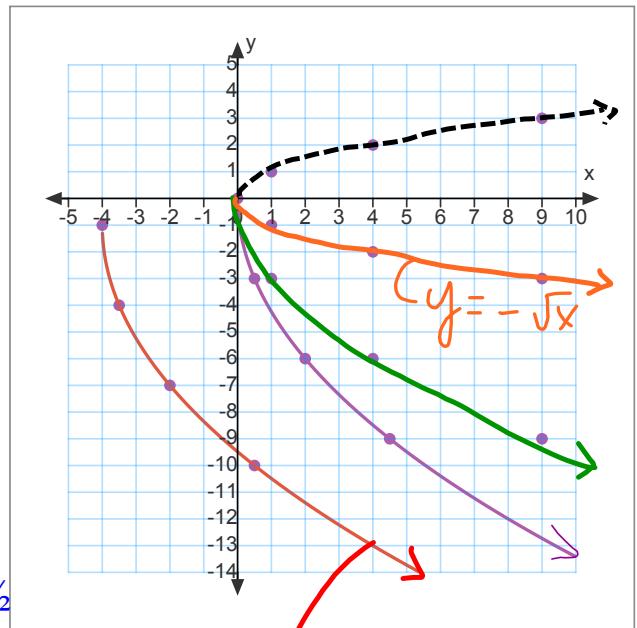
$$y = -3\sqrt{2x}$$

a) Sketch a graph of the following function.

$$y = -3\sqrt{2x+8} - 1$$

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


 (backwards world)



b) Describe the transformations.

reflection in the x -axis

vertical stretch by a factor of 3

horizontal compression by a factor of $\frac{1}{2}$

h.t. 4 units left

v.t. 1 unit down

$$y = -3\sqrt{2x+8} - 1$$

Ex. 2 $y=af[k(x-d)]+c$

Determine the parent function and describe the transformations.

a) $y = -2|3x - 9| + 5$
 $= -2|3(x-3)| + 5$ v.s

- absolute value function
- reflection in the x -axis
- vertical stretch by a factor of 2
- horizontal compression by a factor of $\frac{1}{3}$
- h.t. 3 units right, v.t. 5 units up

b) $y = \frac{1}{2}\sqrt{-3x+6} - 1$
 $= \frac{1}{2}\sqrt{-3(x-2)} - 1$

- square root function
- reflection in the y -axis
- vertical compression by a factor of $\frac{1}{2}$
- horizontal compression by a factor of $\frac{1}{3}$
- h.t. 2 units right, v.t. 1 unit down

c) If $f(x) = \frac{1}{x-3} + 2$

- reciprocal function
- no reflections
- no vertical stretch or compression
- no horizontal stretch or compression
- h.t. 3 units right, v.t. 2 units up

Are there any questions from last day's assigned work you would like to see on the board?

Last day's work: **READ pp.38-39, 50-51 AND 52-58**

p. 51 #1 – 3

pp. 58-60 #1 – 5, 8*, 10 [14, 15]

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Today's Assigned Practice includes:

READ pp.61-69

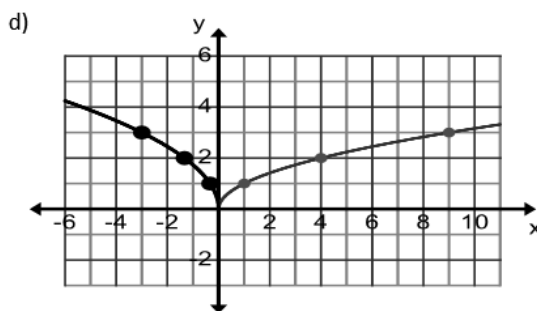
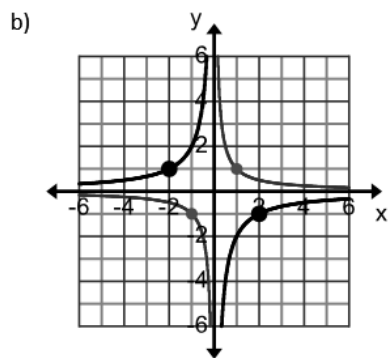
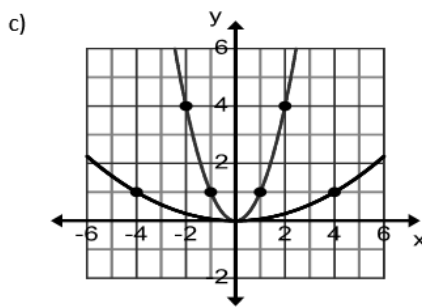
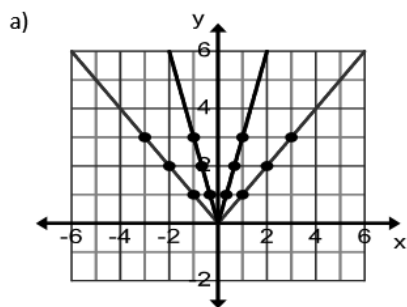
p. 70 #1 – 3, 4abc, 5ab

MCR 3UI

Graph Transformations & Writing Their Equations

p. 59

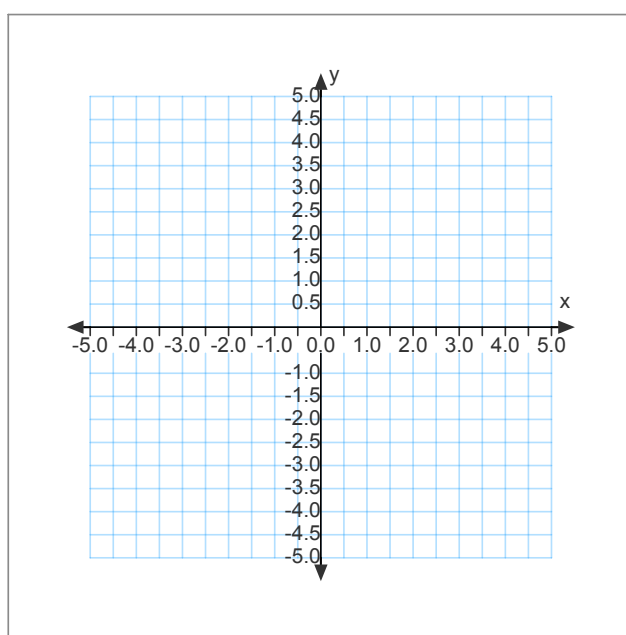
8. In each graph, one of the parent functions $f(x) = x^2$, $f(x) = \sqrt{x}$, $f(x) = \frac{1}{x}$, and $f(x) = |x|$ have undergone a transformation of the form $f(kx)$. Determine the equations of the transformed functions.



p.58 2d)

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

$$y = \frac{1}{(5x)}$$



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

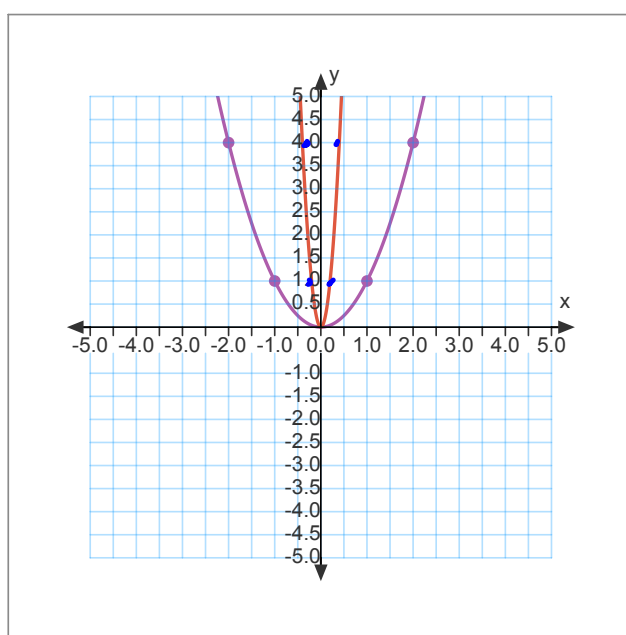
$$y = \frac{1}{5x}$$

4a

$$y = x^2$$

$$y = (2x)^2$$

$$y = (5x)^2$$



$$y = x^2$$

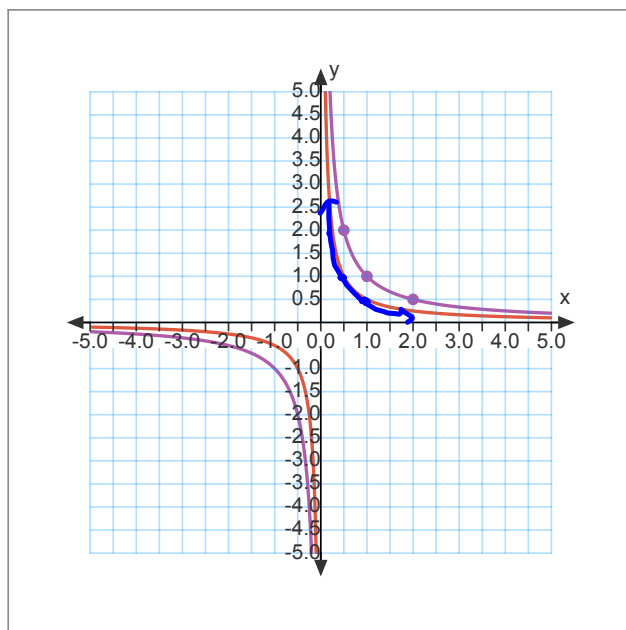
$$y = (2x)^2$$

$$y = (5x)^2$$

4c

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

$$y = \frac{1}{(2x)}$$



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

$$y = \frac{1}{2x}$$

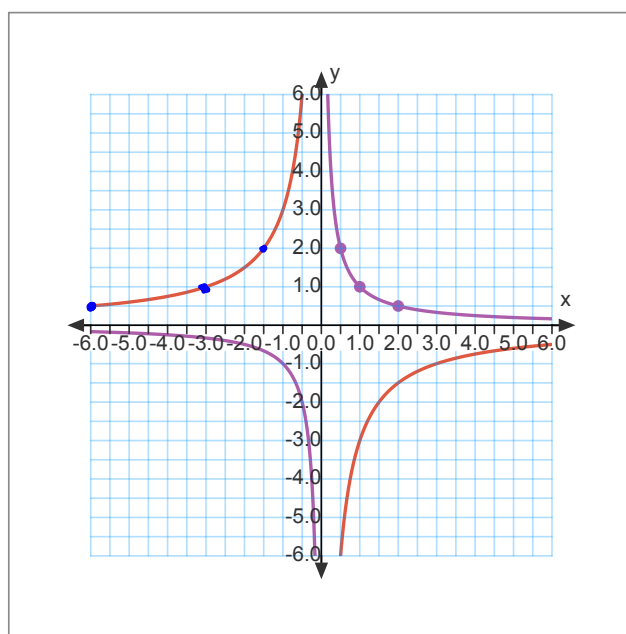
$$y = \frac{1}{3x}$$

10c)

$$f(x) = \frac{1}{x}$$

$$g(x) = \frac{1}{4x}$$

$$h(x) = \frac{1}{\left(-\frac{1}{3}x\right)}$$



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

$$y = \frac{1}{4x}$$

$$y = \frac{1}{\left(-\frac{1}{3}\right)x}$$