

Chapter 1 Assignment

Consider the function $y = 2f(-4(x - 6)) + 1$, where $f(x) = \sqrt{x}$.

a) Rewrite the function using the square root function.

$$y = 2\sqrt{-4(x - 6)} + 1$$

b) Make a table for the parent function.

x	y
0	0
1	1
4	2
9	3

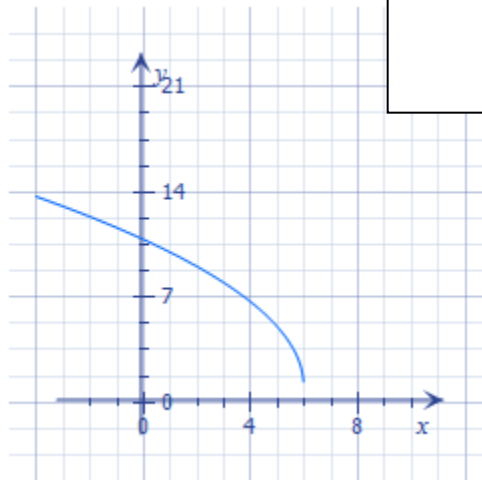
c) Make a table for the transformed function.

x	y
$0 \div -4 + 6 = 6$	$0 \times 2 + 1 = 1$
$1 \div -4 + 6 = 5.75$	$1 \times 2 + 1 = 3$
$4 \div -4 + 6 = 5$	$2 \times 2 + 1 = 5$
$9 \div -4 + 6 = 3.75$	$3 \times 2 + 1 = 7$

d) Describe the transformation done to the parent function.

- Vertical Stretch of factor 2
- Horizontal compression
- Reflection in the y-axis
- Translated 6 units to the right
- Translated 1 unit up

e) Make an accurate sketch of the function.



f) State the domain and range of the function.

$$D = \{x \in R \mid x \leq 6\}$$

$$R = \{y \in R \mid y \geq 1\}$$

Complete a) to f) for the following functions:

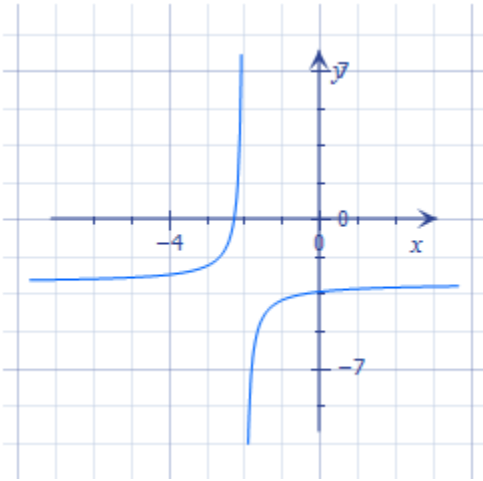
i) $y = -4f(5(x + 2)) - 3$
where $f(x) = \frac{1}{x}$

ii) $y = -f(-2(x - 1)) + 3$
where $f(x) = |x|$

iii) $y = 3f(-2x + 6) + 1$
where $f(x) = x^2$ (HINT factor out the -2 first)

SOLUTIONS:

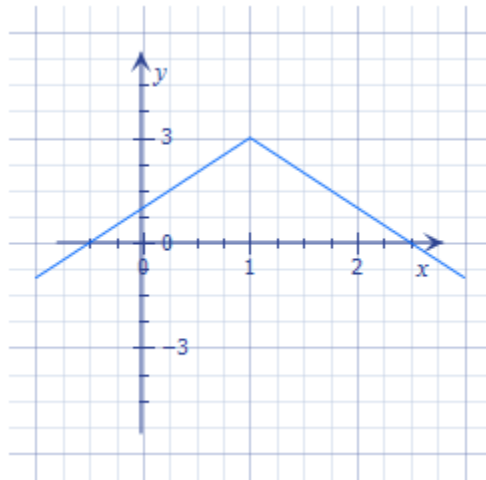
$$y = \frac{-4}{5(x+2)} - 3$$



$$D = \{x \in \mathbb{R} | x \neq -2\}$$

$$R = \{y \in \mathbb{R} | y \neq -3\}$$

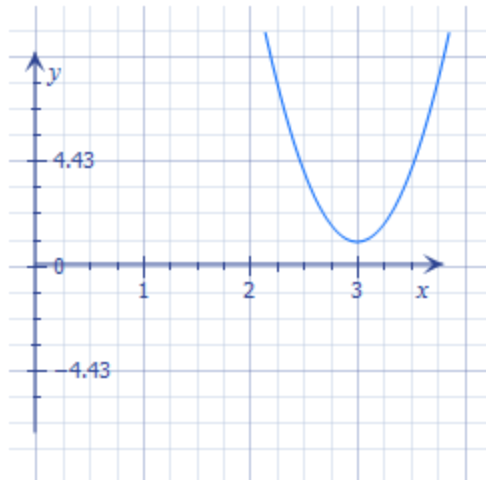
$$y = -|-2(x-1)| + 3$$



$$D = \{x \in \mathbb{R}\}$$

$$R = \{y \in \mathbb{R} | y \leq 3\}$$

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



$$D = \{x \in \mathbb{R}\}$$
$$R = \{y \in \mathbb{R} \mid y \geq 1\}$$