MCR3U
Ms. Kueh

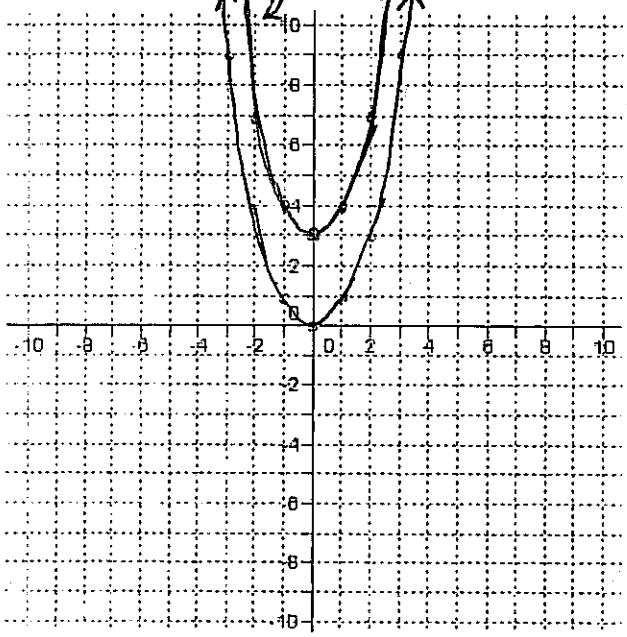
Feb 25 Transformations - Translations

Recall: If a number is added to or subtracted from a function, what happens?

It shifts the graph up or down by the number.

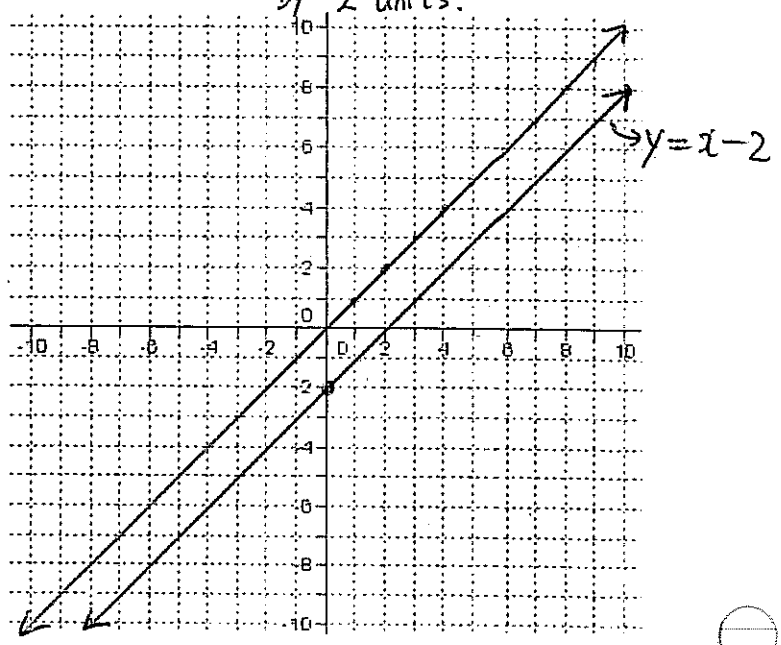
$y = x^2$

$y = x^2 + 3$ → shifts the graph up by 3 units.



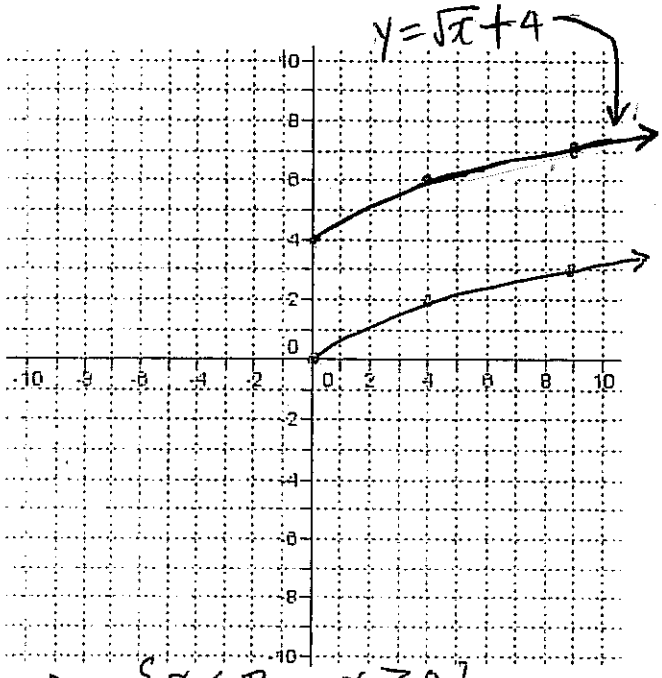
$y = x$

$y = x - 2$ → It shifts down the graph by 2 units.



$y = \sqrt{x}$

$y = \sqrt{x} + 4$ → It shifts up the graph by 4 units.



$D = \{x \in \mathbb{R},\ x \geq 0\}$

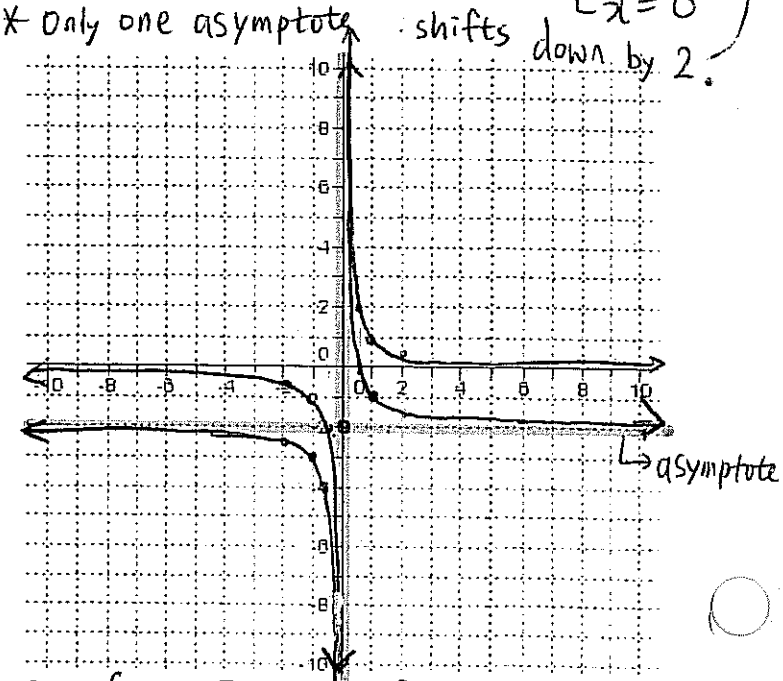
$R = \{y \in \mathbb{R},\ y \geq 4\}$

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

$y = \frac{1}{x} - 2$ → It shifts down the graph by 2 units.

* Only one asymptote

* Two asymptotes: $y = -2$, $x = 0$



$D = \{x \in \mathbb{R},\ x \neq 0\}$

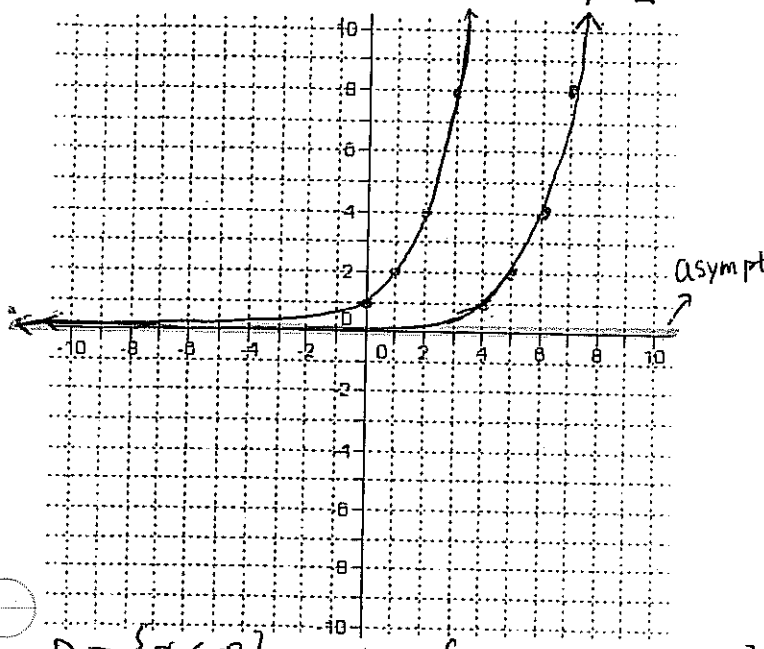
$R = \{y \in \mathbb{R},\ y \neq -2\}$

Recall: If a number is added to or subtracted from x, what happens?
For example, what transformations are applied to the graph of $y = x^2$ to get
$y = (x-2)^2$ It shift the graph by 2 units (to the right)

What makes $(x-2) = 0$? → $x = 2$

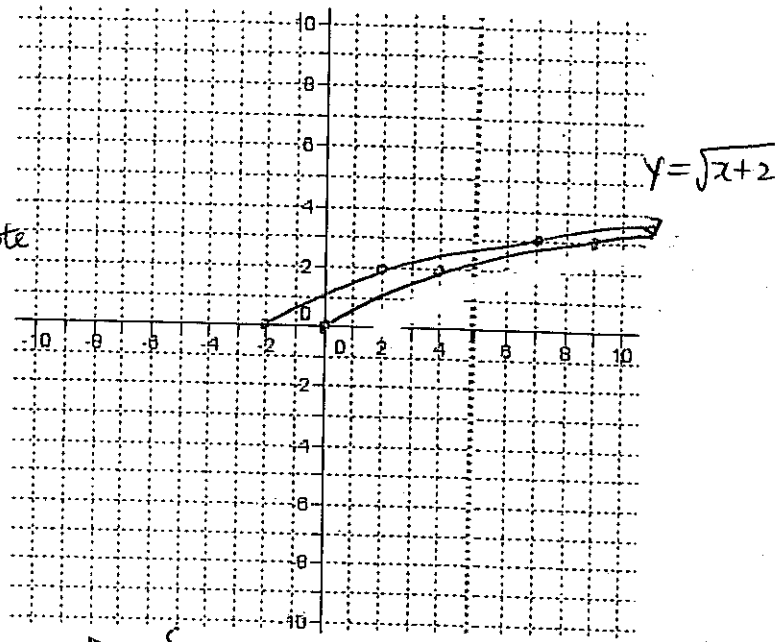
$y = 2^x$
$y = 2^{(x-4)}$ → shift it by 4 to the right.

$Y = 2^{x-4}$



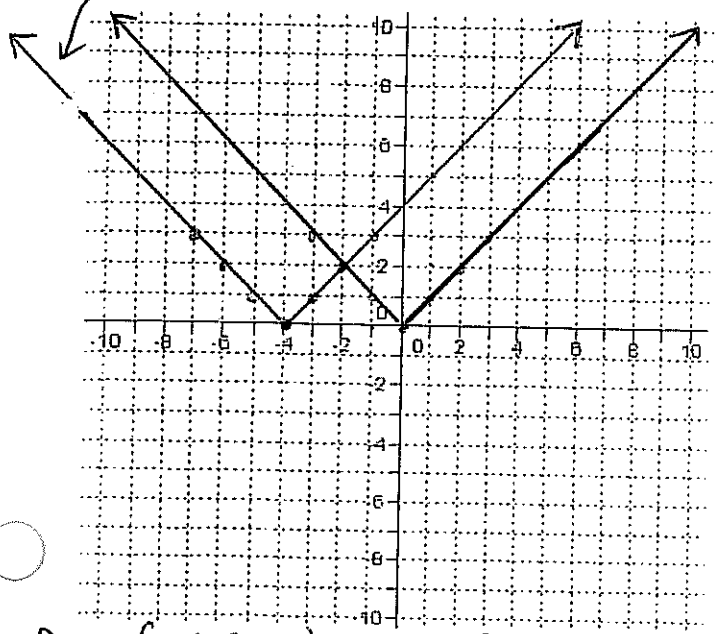
$D = \{x \in \mathbb{R}\}$ $R = \{y \in \mathbb{R}, y > 0\}$

$y = \sqrt{x}$
$y = \sqrt{x+2}$ shift by 2 to the left



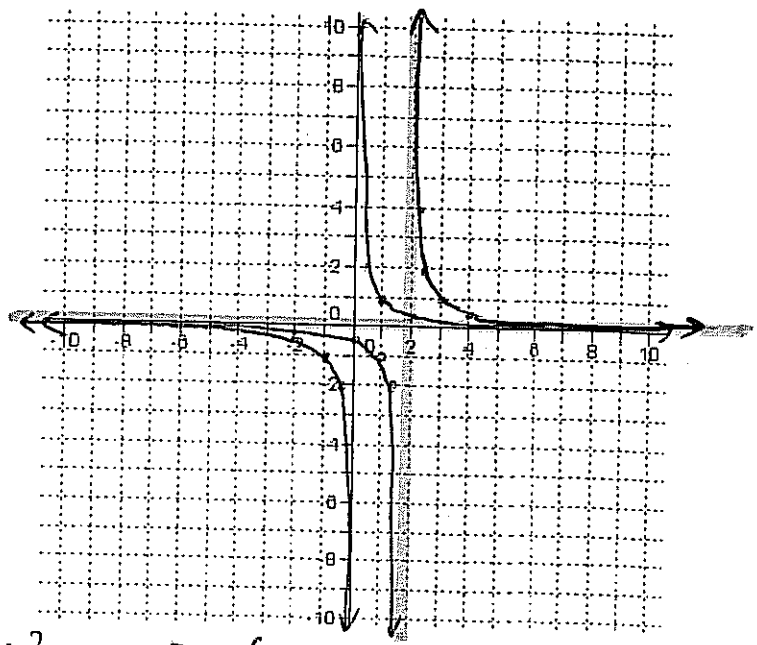
$D = \{x \in \mathbb{R}, x \geq -2\}$ $R = \{y \in \mathbb{R}, y \geq 0\}$

$y = |x|$
$y = |x+4|$ → shift the graph by 4 to the left.



$D = \{x \in \mathbb{R}\}$ $R = \{y \in \mathbb{R}, y \geq 0\}$

$y = \frac{1}{x}$
$y = \frac{1}{x-2}$ 2 assymtotes: $x = 2$ and $y = 0$



$D = \{x \in \mathbb{R}, x \neq 2\}$
$R = \{y \in \mathbb{R}, y \neq 0\}$