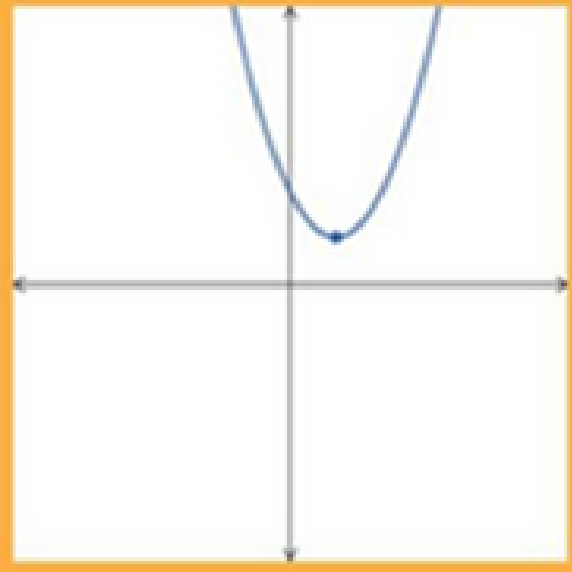
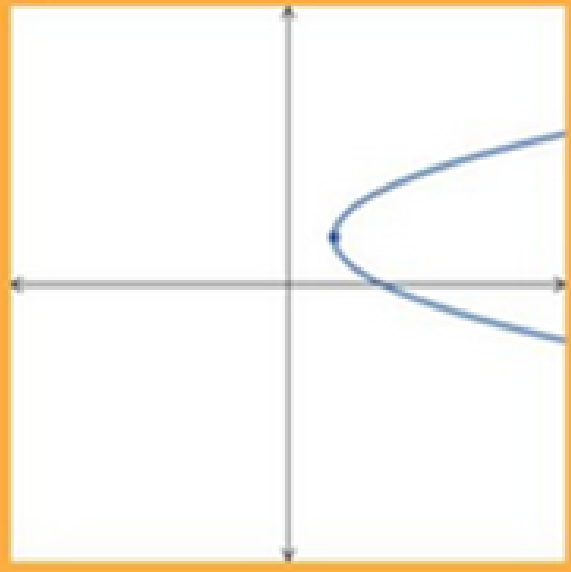


which one doesn't belong?

②



①



③



④



2.1

$$\sqrt[n]{a}$$

Radical Functions and Transformations

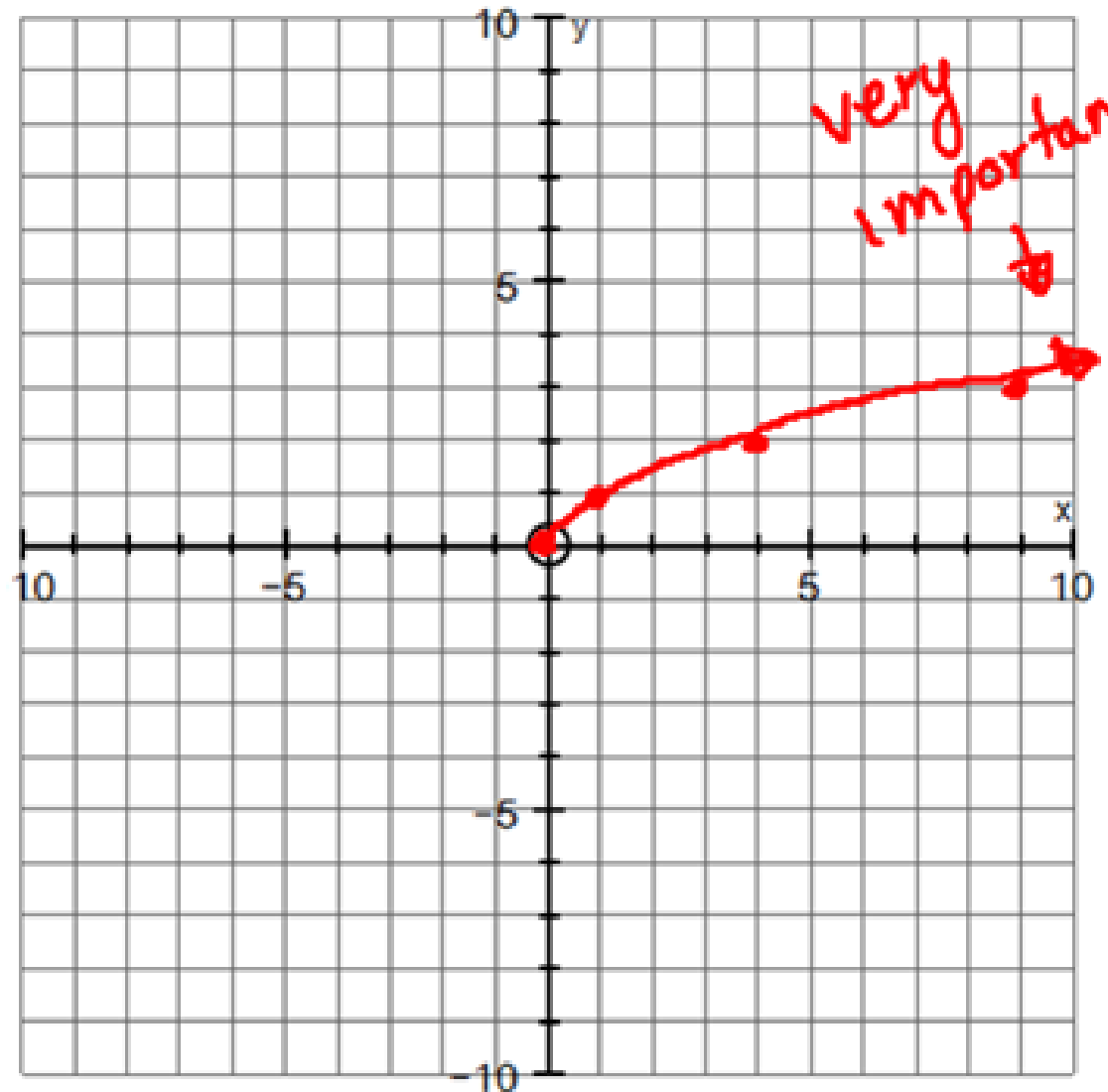
Focus on...

- investigating the function $y = \sqrt{x}$ using a table of values and a graph
- graphing radical functions using transformations
- identifying the domain and range of radical functions

Sketch by creating a table of values $y = \sqrt{x}$

x	y
0	0
1	1
4	2
9	3
16	4

endpoint (0,0)



The graph has an end point of $(0,0)$ and continues up and to the right.

Domain: $\{x \mid 0 \leq x < \infty\}$ or $\{x \mid x \geq 0\}$ or $x \in [0, \infty)$

include \rightarrow don't include

\uparrow element

Range: $\{y \mid y \geq 0\}$

$y \in [0, \infty)$

Transformations of radical functions

$$y = a \sqrt{b(x-h)} + k$$

Handwritten annotations:
A red checkmark and R_x are above the a .
A blue checkmark and R_y are below the $b(x-h)$ term.

Vertical stretch: a

Vertical translation: k

Horizontal stretch: $\frac{1}{b}$

Horizontal translation: h

Mapping Rule: $(x, y) \rightarrow \left(\frac{1}{b}x + h, ay + k \right)$

Handwritten annotations:
A blue checkmark and R_y are above the $\frac{1}{b}$.
A red checkmark and R_x are above the $ay + k$.

$$y = f(x)$$
$$y = a f(b(x-h)) + k$$

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

Example: Graph

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

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

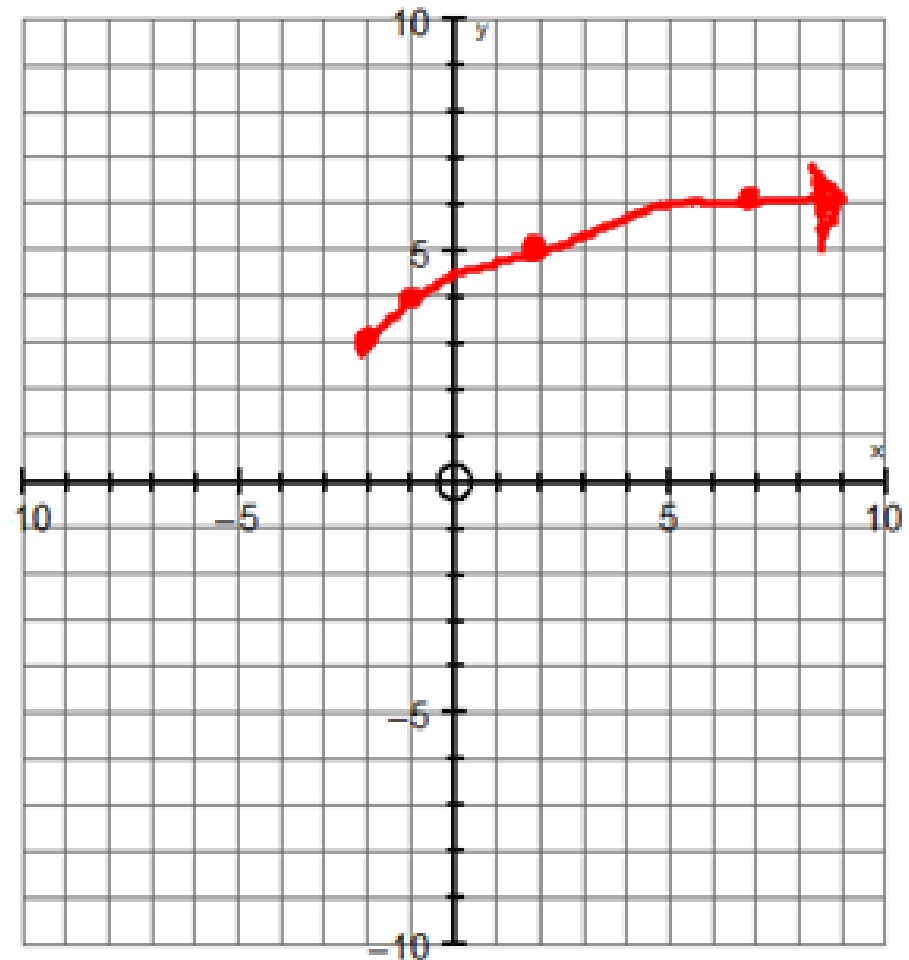
VT 3 HT -2

$\leftarrow y = \sqrt{x}$

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

$$\begin{array}{r} 6-4-0 \\ \hline 132-0 \end{array}$$

$$\begin{array}{r} 4+2-2 \\ \hline 455+3 \end{array}$$



End pt : (-2, 3) (HT, VT)

$$D: \{x \mid x \geq -2\}$$

$$R: \{y \mid y \geq 3\}$$

Example: Graph

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

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

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

VS 2 HS $\frac{1}{3}$

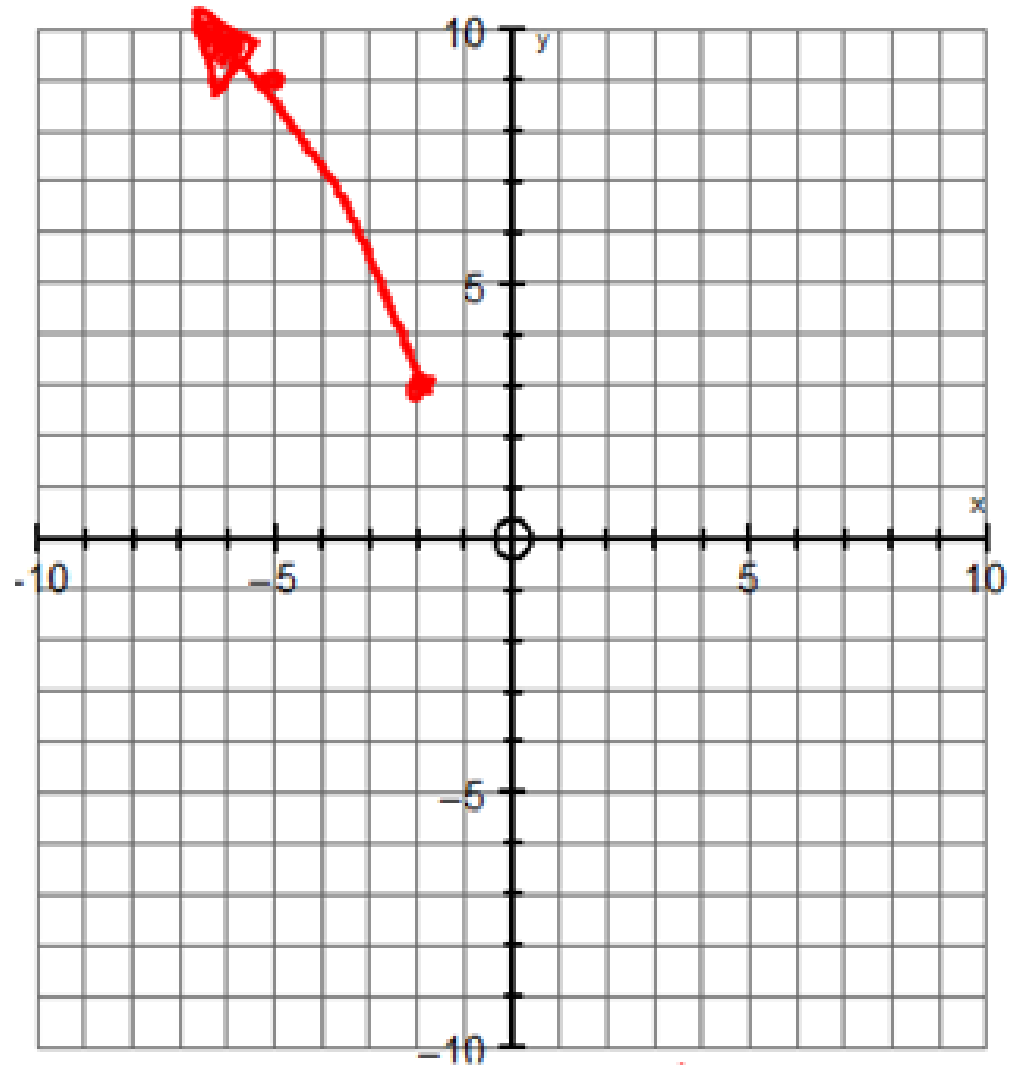
VT 3 HT -2

Rx No Ry Yes

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

$$\begin{array}{r|l} 0 & 0 \\ 9 & 3 \\ 36 & 6 \\ 81 & 9 \end{array}$$

$$\begin{array}{r|l} -2 & 3 \\ -5 & 9 \\ -14 & 15 \\ -29 & 21 \end{array}$$



Dis: $x | x \leq -2$

R: $y | y \geq 3$

HW:
pg 72
#1-5

HW: read ch 2.1 and do pg 72 #1-5