480/81
Day 6
Notes

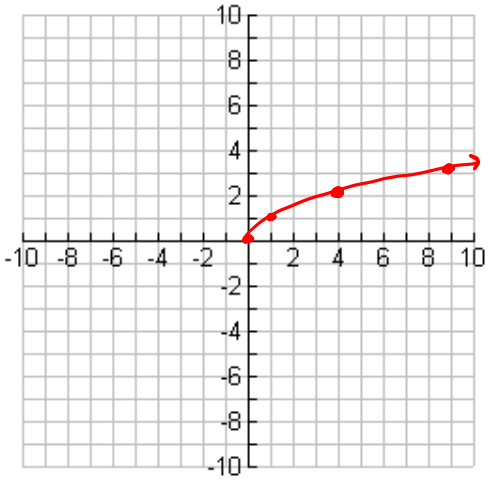
GRAPHING SQUARE ROOT FUNCTIONS

OBJECTIVES:

1) Graph square root functions by translating the mother function.

GRAPHS OF SQUARE ROOT FUNCTIONS

Let's first take a look at the mother function $y = \sqrt{x}$.



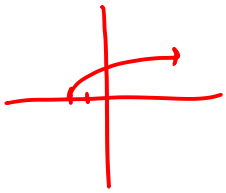
x	y
~~-2~~	
0	0
1	1
4	2
9	3

Domain: $x \geq 0$ Range: $y \geq 0$

Endpoint: (0,0)

Now let's translate a few of these graphs. We're just going to provide a sketch.

a. $y = \sqrt{x+2}$

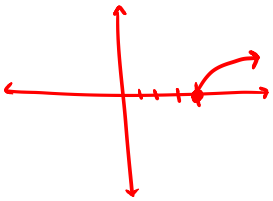


D: $x \geq -2$

R: $y \geq 0$

Endpoint: (-2,0)

b. $y = \sqrt{x-4}$

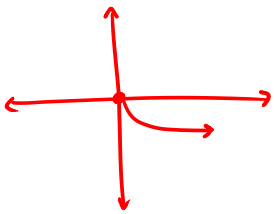


D: $x \geq 4$

R: $y \geq 0$

Endpoint: (4,0)

c. $y = -\sqrt{x}$

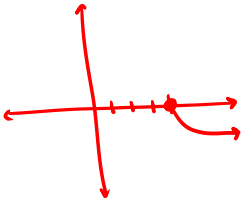


D: $x \geq 0$

R: $y \leq 0$

Endpoint: (0,0)

d. $y = -\sqrt{x-4}$

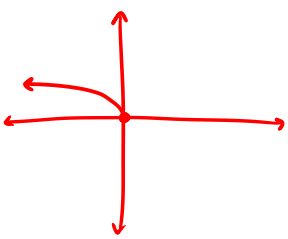


D: $x \geq 4$

R: $y \leq 0$

Endpoint: (4,0)

e. $y = \sqrt{-x}$

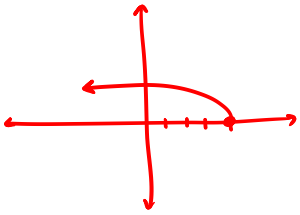


D: $x \leq 0$

R: $y \geq 0$

Endpoint: (0,0)

f. $y = \sqrt{4-x}$

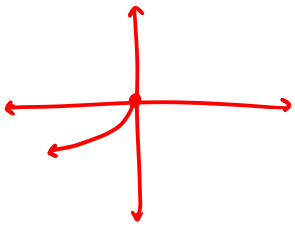


D: $x \leq 4$

R: $y \geq 0$

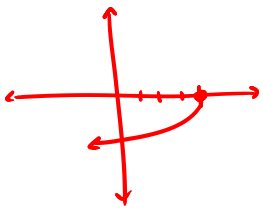
Endpoint: (4,0)

g. $y = -\sqrt{-x}$



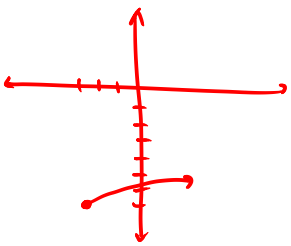
D: $x \leq 0$
R: $y \leq 0$
Endpoint: $(0,0)$

h. $y = -\sqrt{4-x}$



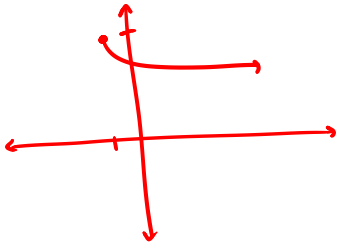
D: $x \leq 4$
R: $y \leq 0$
Endpoint: $(4,0)$

i. $y = \sqrt{x+3} - 7$



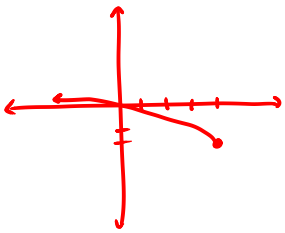
D: $x \geq -3$
R: $y \geq -7$
Endpoint: $(-3,-7)$

j. $y = -\sqrt{x+1} + 7$



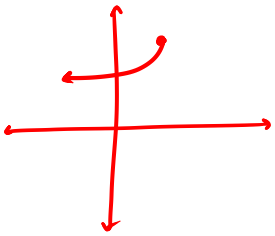
D: $x \geq -1$
R: $y \leq 7$
Endpoint: $(-1,7)$

k. $y = -2 + \sqrt{4-x}$



D: $x \leq 4$
R: $y \geq -2$
Endpoint: $(4,-2)$

l. $y = -\sqrt{3-x} + 5$



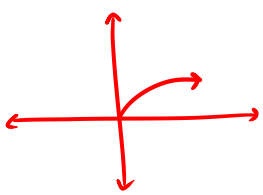
D: $x \leq 3$
R: $y \leq 5$
Endpoint: $(3,5)$

CONCLUSIONS:

- $y = \sqrt{x-h} + k$ has endpoint (h,k) and domain $x \geq h$. R: $y \geq k$
- $y = \sqrt{x+h} + k$ has endpoint $(-h,k)$ and domain $x \geq -h$. R: $y \geq k$
- $y_1 = \sqrt{x-h} + k$ and $y_2 = \sqrt{h-x} + k$ both have endpoint (h,k), but the graph are different because: y_2 is reflected over the y axis.
- $y_1 = \sqrt{x-h} + k$ and $y_2 = -\sqrt{x-h} + k$ both have endpoint (h,k), but the graphs are different because: y_2 is reflected over the x axis

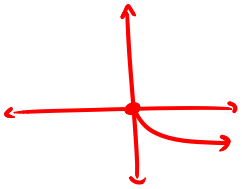
General sketches:

1) $y = \sqrt{x}$



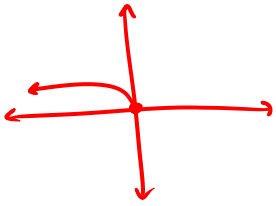
D: $x \geq 0$
R: $y \geq 0$

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



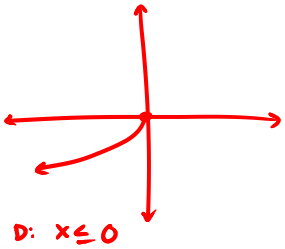
D: $x \geq 0$
R: $y \leq 0$

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



D: $x \leq 0$
R: $y \geq 0$

4) $y = -\sqrt{-x}$



D: $x \leq 0$
R: $y \leq 0$