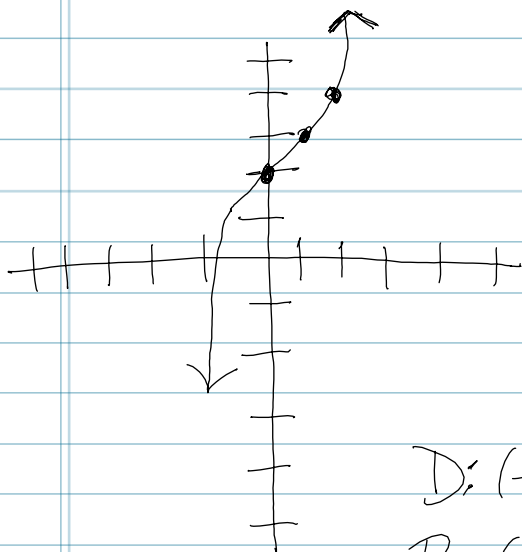


\* Sept. 21, 2012  
REVIEW

ex.  $y = (x-1)^3 + 3$



\* formula:  $y = a(x-h)^3 + k$

basic shape:  $\begin{matrix} + \\ \uparrow \\ \downarrow \end{matrix}$   $\begin{matrix} - \\ \downarrow \\ \uparrow \end{matrix}$

"vertex":  
 $(h, k) = (1, 3)$

$a = 1$     +    uphill  
                  1    neutral

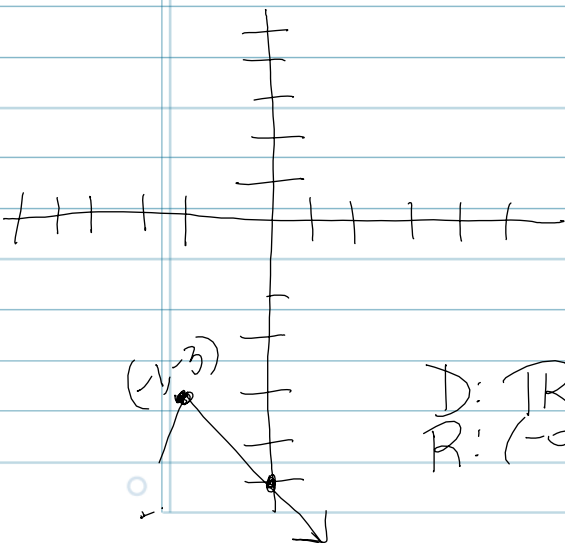
$D: (-\infty, \infty)$

$R: (-\infty, \infty)$

x	y
-1	-5
0	2
1	3
2	4

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

\* formula:  $y = a|x-h| + k$



x	y
-2	-5
-1	-3
0	-5

$D: \mathbb{R}$   
 $R: (-\infty, -3]$

$y = |x|$

basic shape:  $\begin{matrix} \swarrow \\ \downarrow \\ \searrow \end{matrix}$

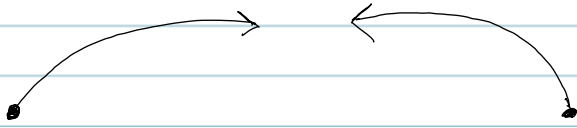
vertex:  
 $(h, k) = (-1, -3)$

$a = -2$     -    down  
                  2    stretched  
                          "narrow"

$x = 0$   
 $y = -2|0+1| - 3$   
 $y = -2(1) - 3$   
 $y = -5$

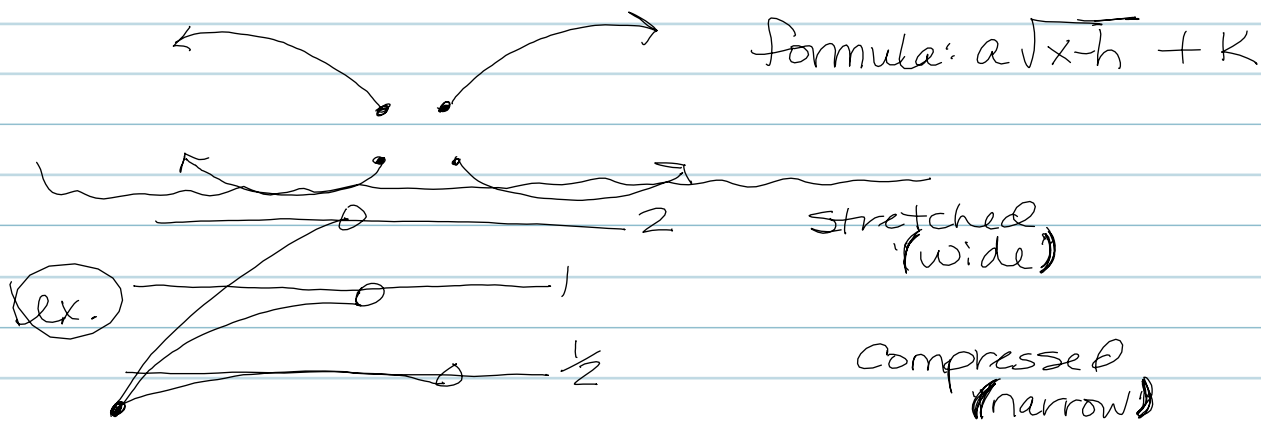
Sept. 21 CONT. NOTES

SQUARE ROOT FUNCTION



# Sept. 21 NOTES "CONT"

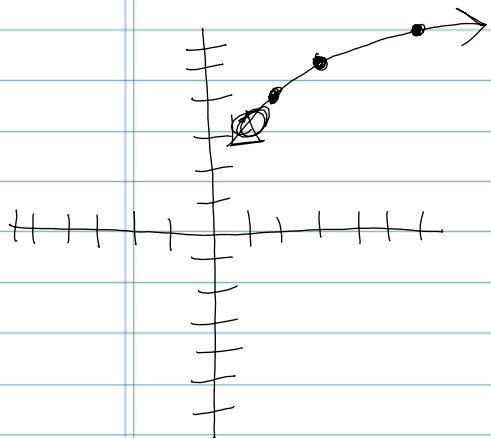
## SQUARE ROOT FUNCTION



format:  $y = \sqrt{x-h} + k$   
 $y = \sqrt{x-2} + 4$

basic shape:

vertex:  $(2, 4)$   
 $(h, k)$



X	Y
1	$\sqrt{1}$ not real
2	4
3	5
4	$\sqrt{2} + 4$
5	—
6	6

$a=1$  + up  
 1 neutral

$$\begin{cases} y = \sqrt{1-2} + 4 \\ y = \sqrt{-1} + 4 \end{cases}$$

D:  $[2, \infty)$

R:  $[4, \infty)$

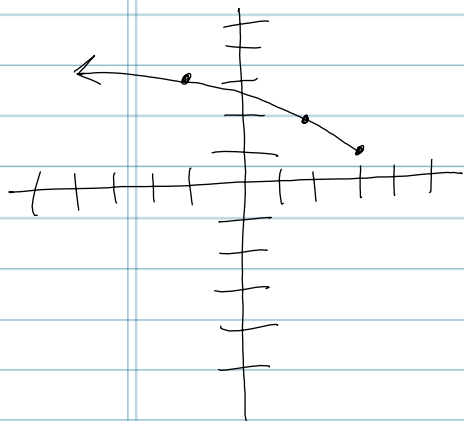
$$\begin{cases} y = \sqrt{4-2} + 4 \\ y = \sqrt{2} + 4 \end{cases}$$

$$\begin{cases} y = \sqrt{6-2} + 4 \\ y = \sqrt{4} + 4 \\ y = 2 + 4 \\ y = 6 \end{cases}$$

$$\begin{cases} y = \sqrt{3-2} + 4 \\ y = \sqrt{1} + 4 \\ y = 1 + 4 \\ y = 5 \end{cases}$$

# Sept. 21, 2012 NOTES

(ex)  $Y = \sqrt{3-x} + 1$



basic shape:

Vertex:

$(h, k) = (3, 1)$

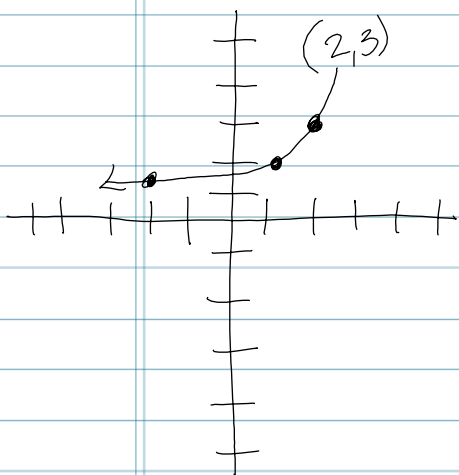
* -1	3
X	Y
0	
1	
* 2	2
* 3	1
4	$\sqrt{1}$ not real

$a = 1$  + up  
| neutral

$D: (-\infty, 3]$

$R: [1, \infty)$

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



basic shape:

Vertex:  $(2, 3)$

$(h, k)$

X	Y
* -2	1
-1	
0	
* 1	2
* 2	3
3	

$a = -1$  - down  
| neutral

$-x =$  Left

final shape:

$D: (-\infty, 2]$

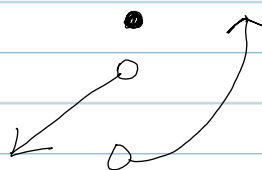
$R: (-\infty, 3]$

Sept. 21, 2012 NOTES "CONT"

\* Piece wise Function

$$f(x) = \begin{cases} x+3 & \text{if } x < 0 \\ 5 & \text{if } x = 0 \\ x^2 & \text{if } x > 0 \end{cases}$$

find:  $f(4) = (4)^2 = 16$   
3rd part



HW

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

$$y = -\frac{1}{2} |x+1| - 4$$

$$y = \sqrt{3-x} + 6$$

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

$$y = x^2 + 3$$

$$y = -\sqrt{x+1} - 4$$

need: Basic Shape

Vertex (h,k)

a

up/down

width

Left/right

final shape

Domain

Range