

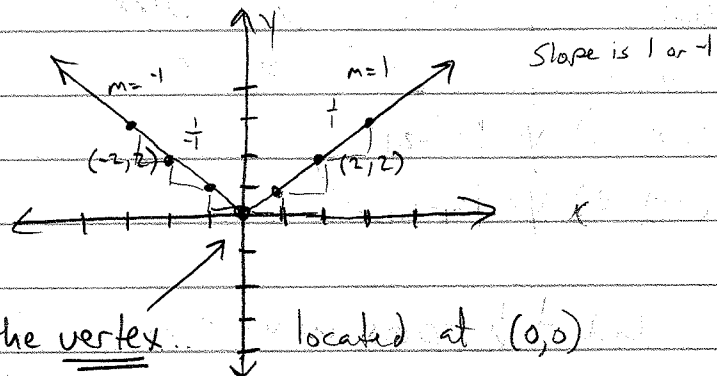
2.7a Absolute Value Function! Transformations

* Comparing graphs to $f(x) = |x|$ or $y = |x|$

Figuring out $y = a|x-h|+k$... eventually

1st - What does $y = |x|$ look like?

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



Called the vertex... located at $(0,0)$

Is highest or lowest point of the graph

Symmetric about the y -axis (can fold on that line)
(determined by vertex)

Transformations shift things around.

Translation moves something horizontally &/or vertically without changing size & shape

We'll look at $y = |x-h|+k$

vertex

$(0,0)$

a) $y = |x|$

$(0,1)$

b) $y = |x|+1$

$(0,3)$

c) $y = |x|+3$

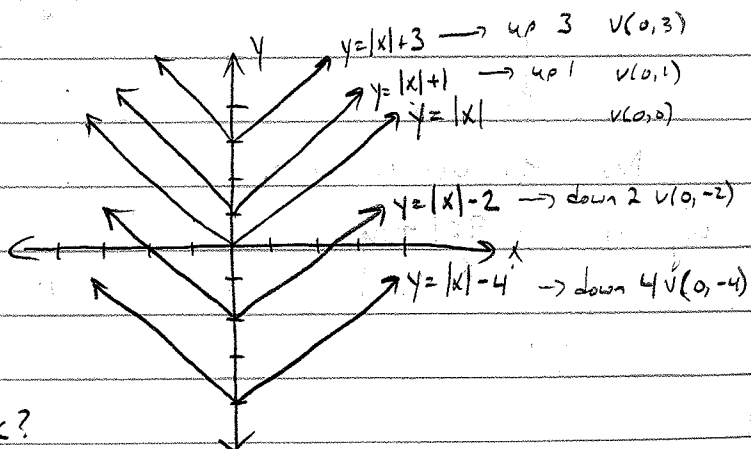
$(0,-2)$

d) $y = |x|-2$

$(0,-4)$

e) $y = |x|-4$

} on same graph



so, what happens when change k ?

Vertex moves up or down k units - moves vertically

$$y = |x - h| + k$$

vertex

(0,0) a) $y = |x|$

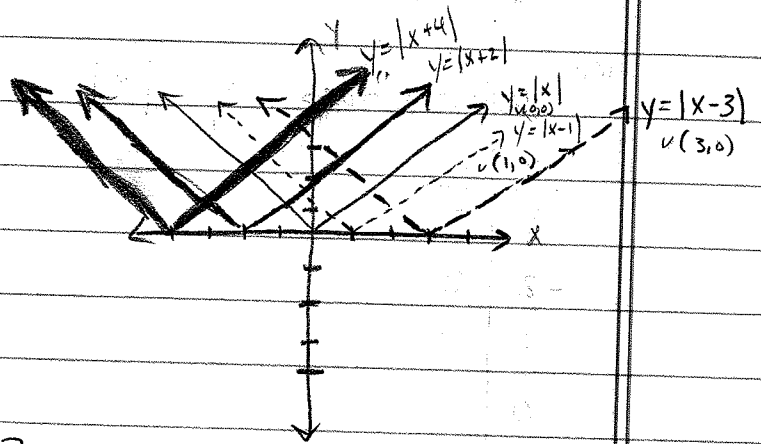
(1,0) b) $y = |x - 1|$

(3,0) c) $y = |x - 3|$

(-2,0) d) $y = |x + 2|$

(-4,0) e) $y = |x + 4|$

On same graph



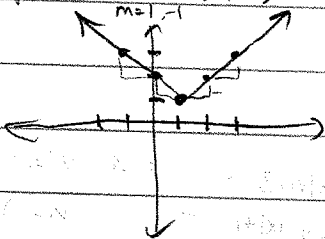
What happens when change h ?

Vertex moves opposite direction left or right — horizontally h units

Name the vertex & sketch

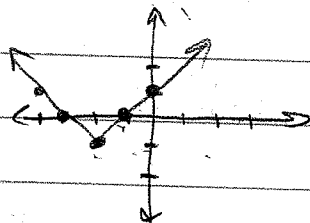
1) $y = |x - 1| + 1$

Vertex (1, 1)



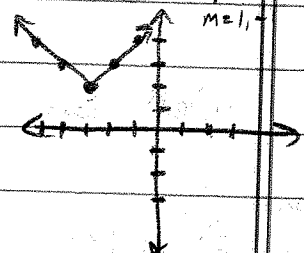
2) $y = |x + 2| - 1$

Vertex (-2, -1)



3) $y = |x + 3| + 2$

Vertex (-3, 2)



Name the vertex for:

4) $y = |x - 92| + 16$

(92, 16)

5) $y = |x + 1066| - 1945$

(-1066, -1945)