DO NOW

You need to have your graphing calculator.

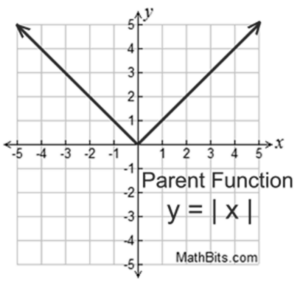
Grab a calculator adaptor and sign in.

4.4 Graphing Absolute Value Functions

absolute value functions look like: a V

* piecewise function

* 2 lines



ABSOLUTE VALUE FUNCTIONS

$$f(x) = a|x - h| + k$$

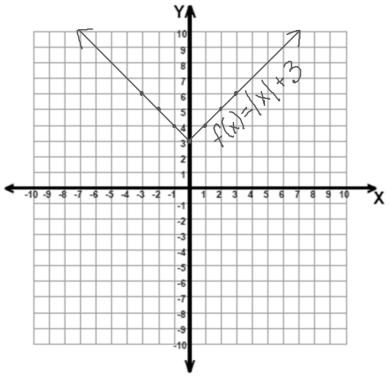
- Absolute value functions are graphs that look like V's.
- If ***a* is positive**, the V opens **upward** and has a **minimum** point.
- If ***a* is negative**, the V opens **downward** and has a **maximum** point.
- The **vertex**, or **turning point**, is either the maximum or minimum. It is an ordered pair.
- The **axis of symmetry** is a vertical line of symmetry. It is of the form "$x =$ "
- The **end behavior of the graph** is whether it opens up or down.

USING THE TI-NSPIRE TO GRAPH:

1. Open a new document. (Choose no when asked to save unsaved document.)
   Choose 2: Add Graphs
   Hit CTRL - G (or Tab) to open (or close) the equation entry line.
   To get absolute value - use the key to the right of 9. Choose |□|
   Hit Enter to display the graph.
2. Look at the graph to approximate the vertex.
3. Hit CTRL - T to open (or close) a table of values. CTRL - 6 will move the table of values to a separate page.
4. Locate the vertex in the table of values and position this as the middle entry in the table on the screen. Copy these five ordered pairs to a table on your paper.
5. You will need to move the table to get one value above the copied table information and one value from below the copied table information. You will now have 7 ordered pairs in your table.
6. Graph the points on the coordinate plane and use a straight edge to draw the V.
7. From here, you can be identify: turning point, axis of symmetry, *x*-intercepts, *y*-intercepts.

1. Graph: $f(x) = |x| + 3$

X	Y
-3	6
-2	5
-1	4
0	3
1	4
2	5
3	6



vertex: (0, 3)

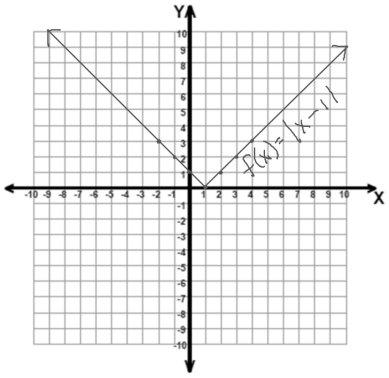
axis of symmetry: X = 0

y-intercepts: (0, 3)

x-intercepts: none

2. Graph: $f(x) = |x - 1|$

X	Y
-2	3
-1	2
0	1
1	0
2	1
3	2
4	3



vertex: (1, 0)

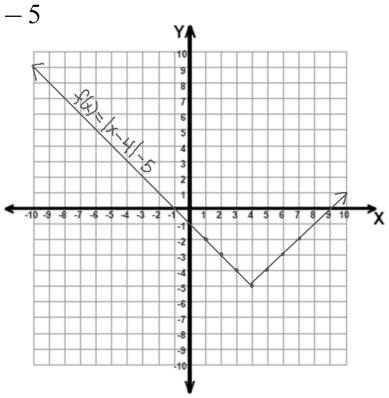
axis of symmetry: X = 1

y-intercepts: (0, 1)

x-intercepts: (1, 0)

3. Graph: $f(x) = |x - 4| - 5$

X	Y
1	-2
2	-3
3	-4
4	-5
5	-4
6	-3
7	-2



vertex: (4, -5)

axis of symmetry: X=4

y-intercepts: (0, -1)

x-intercepts: (-1, 0) and (9, 0)

HOMEWORK

Worksheet - HW 4.4