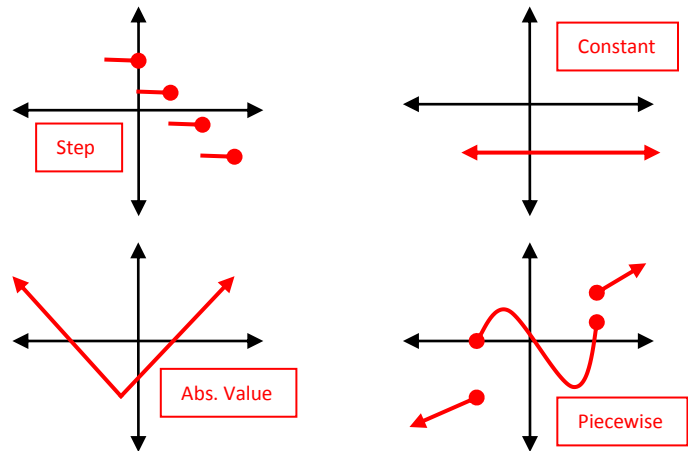


# SPECIAL FUNCTIONS

Match the function name with the graph that it makes.

- 1) Constant
- 2) Greatest Integer (Step)
- 3) Absolute Value
- 4) Piecewise



Match the function name with its equation.

- 1) Constant
- 2) Greatest Integer (Step)
- 3) Absolute Value
- 4) Piecewise

$f(x) = |4x - 1| + 9$  Abs. Value

$f(x) = [3x]$  Step

$f(x) = 5$  Constant

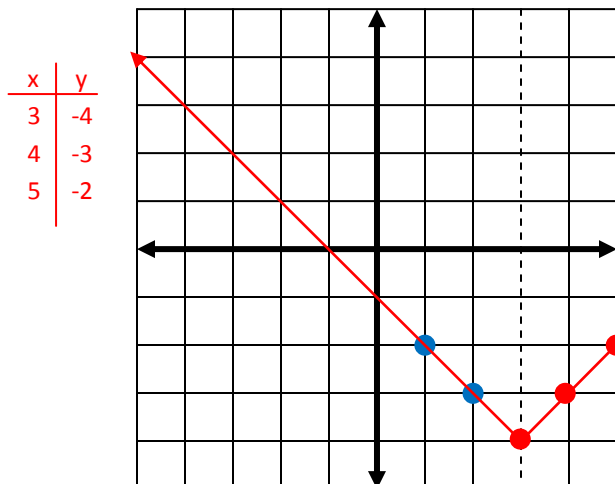
$f(x) = f(x) = \begin{cases} -x, & x < 0 \\ x, & x \geq 0 \end{cases}$  Piecewise

**ABSOLUTE VALUE FUNCTIONS**

Finding a vertex: 1) x-coordinate from within | |, change the sign.  
2) y-coordinate from outside | |, keep the sign.

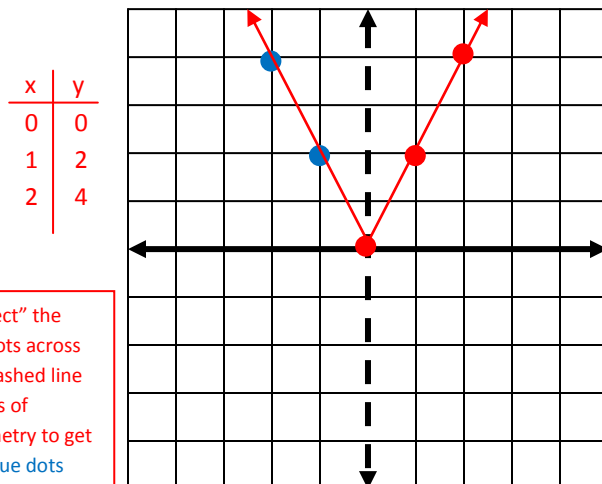
Graph the following functions

1)  $f(x) = |x - 3| - 4$  Vertex = (3, -4)

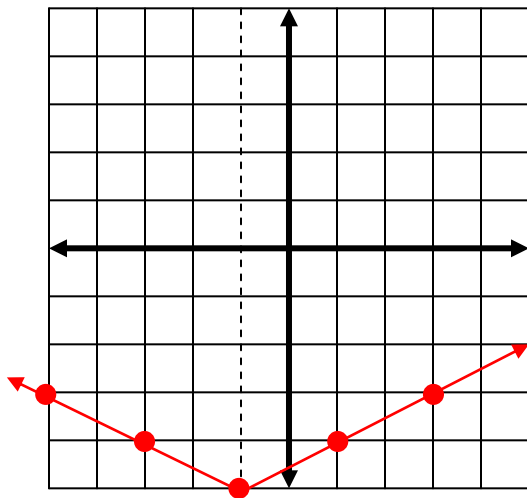


"Reflect" the red dots across the dashed line or axis of symmetry to get the blue dots

2)  $f(x) = |2x|$  Vertex = (0, 0)

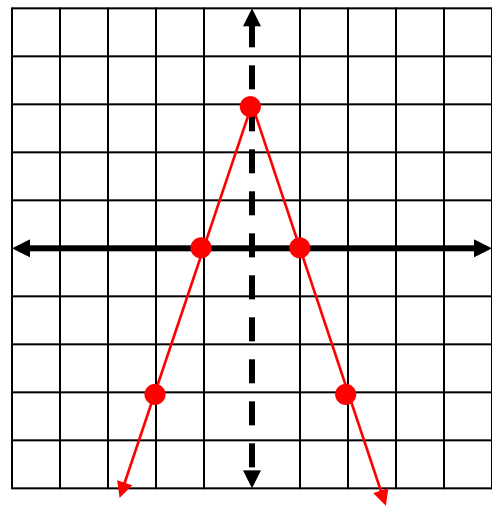


3)  $g(x) = \frac{1}{2}|x+1| - 5$  Vertex = (-1, -5)



Instead of an x-y/chart, you can count a slope.

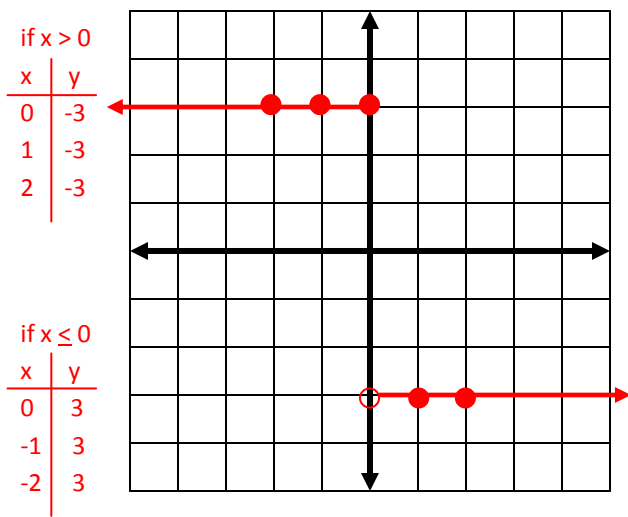
4)  $h(x) = -3|x| + 3$  Vertex = (0, 3)



**PIECEWISE FUNCTIONS**

Graph each "piece" separately. 1) Make an x/y-chart if necessary for each "piece" of the graph.  
2) Graph the linear or constant parts

5)  $f(x) = \begin{cases} -3 & \text{if } x > 0 \\ 3 & \text{if } x \leq 0 \end{cases}$



6)  $f(x) = \begin{cases} -x, & x < 1 \\ 4x, & x \geq 1 \end{cases}$

