The Absolute Value Function – Notes
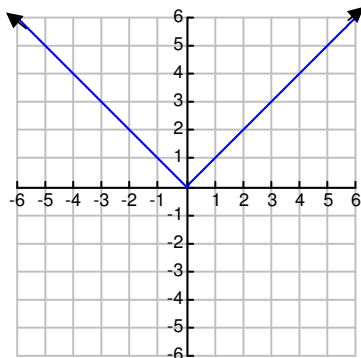
Another parent function is called the **absolute value function**. Its equation is $y=|x|$ and it graphs a *'V-shape'.* The absolute value function and its graph can also be represented by a **piecewise function** and is defined as follows:

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

The vertical stretch or shrink as well as the phase and vertical shifts follow the same guidelines as the linear functions. The negative sign in front of the absolute value symbol **reflects** the graph **across the x-axis**. The graph of $y=-|x|$ looks like this:
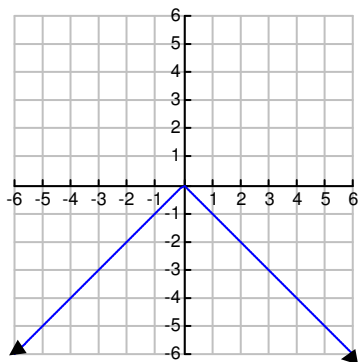
The general equation for graphing all absolute value equations that open up or down is $y=m|x-h|+k$

Consider the equation: $y=-3|x+1|-2$

For this graph,

a)   the parent function is ___ y = |x| _____.

b)   the function name is _____ absolute value _____.

c)   there is a _____ across the x-axis

d)   there is a vertical _____ by a factor of _____.

e)   the phase shift is _____ to the _____.

f)   the vertical shift is _____.

g)   graph (Do the reflection first. Find the vertex using the phase and vertical shifts.)

Write the equation from the given graph :

For this graph,

a)   the parent function is _____

b)   the function name is _____

c)   is there a reflection across the x-axis? _____

d)   vertical stretch or compression_____

e)   phase shift _____

f)   vertical shift _____

g)   equation _____
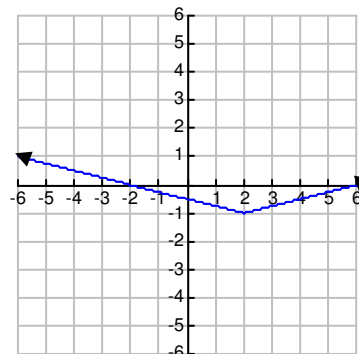
Write the equation from the given graph :

For this graph,

a)   the parent function is _____

b)   the function name is _____

c)   is there a reflection across the x-axis? _____

d)   vertical stretch or compression_____

e)   phase shift _____

f)   vertical shift _____

e)   equation_____