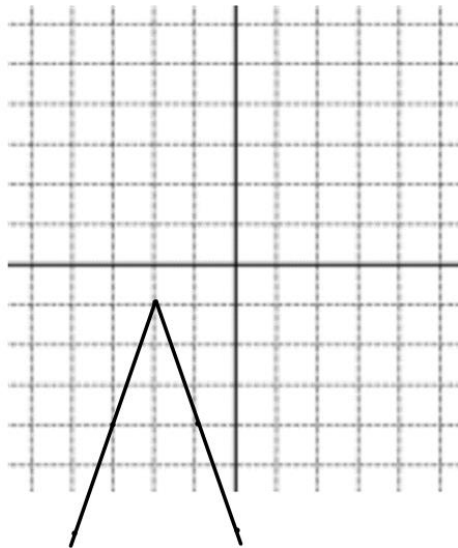


## Differentiation of an Absolute Value Function

Since an absolute value function is represented by the graph of two “linear” equations coming together to form a “V” the derivative is a piecewise function of two CONSTANT values (represented by the slopes of those linear pieces).

EX) Find the derivative of  $f(x) = -3|x+2| - 1$



Since the slope of the graph is  $\pm 3$ , the derivative of this function is:

$$f'(x) = \begin{cases} 3, & x < -2 \\ -3, & x > -2 \end{cases}$$

Note: the slope of the graph is **undefined** when  $x = -2$  because the slope from the left does not equal slope from the right!