Piecewise Functions

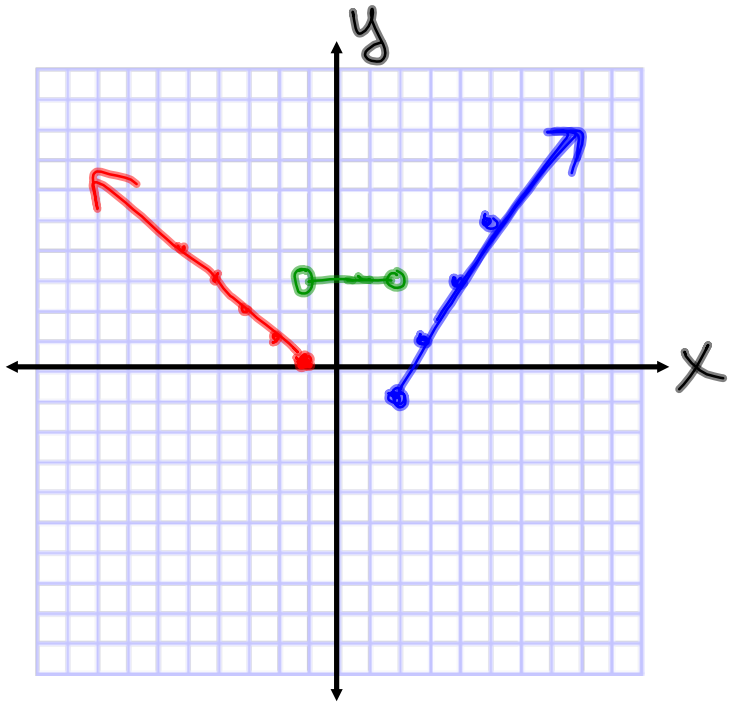
piecewise functions: a system of equations, each of which applies to a different part of the function's domain.

EX:
$$y = \begin{cases} -x - 1, & \text{if } x \le -1 \\ 3, & \text{if } -1 < x < 2 \\ 2x - 5, & \text{if } x \ge 2 \end{cases}$$

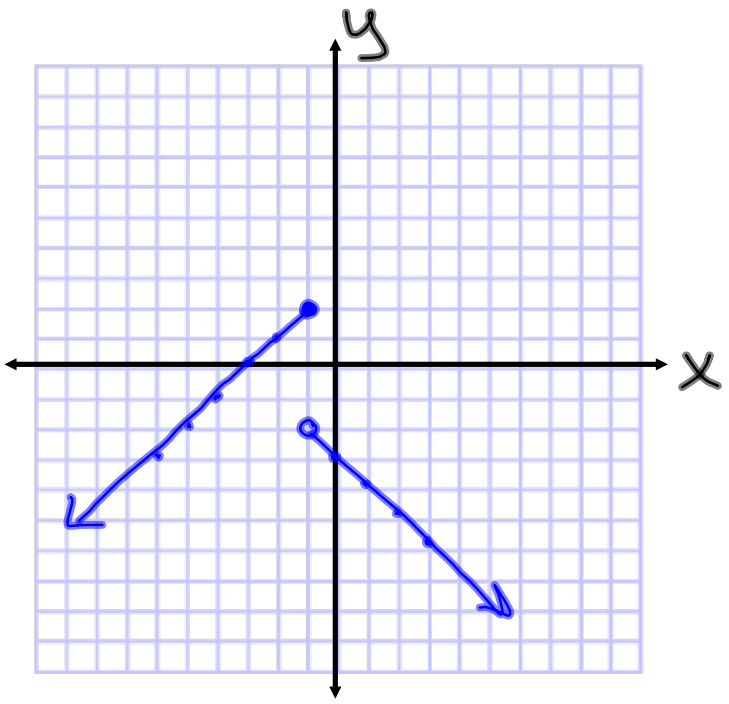
$y = -x - 1$

$y = 3$

$y = 2x - 5$



EX: write the piecewise function given by the graph:



$$y = \begin{cases} x+3, & \text{if } x \le -1 \\ -x-3, & \text{if } x > -1 \end{cases}$$

Step function - a piecewise function that is defined by a constant value over each part of its domain (the graph looks like a set of stairs)

EX:

$$y = \begin{cases} 5, & \text{if } 0 < x \le 1 \\ 10, & \text{if } 1 < x \le 2 \\ 15, & \text{if } 2 < x \le 3 \\ 20, & \text{if } 3 < x \le 4 \end{cases}$$