Section 2.2 Linear Equations in Two Variables

If A and B are not both equal to zero then the solutions to an equation of the form $Ax + By = C$ are points that form a line in the Cartesian Plane. Therefore, any equation that can be written as $Ax + By = C$ is said to be a ***linear equation***.

Any equation of the form $Ax + By = C$ where A and B are not both equal to zero is called the ***standard form*** of a line.

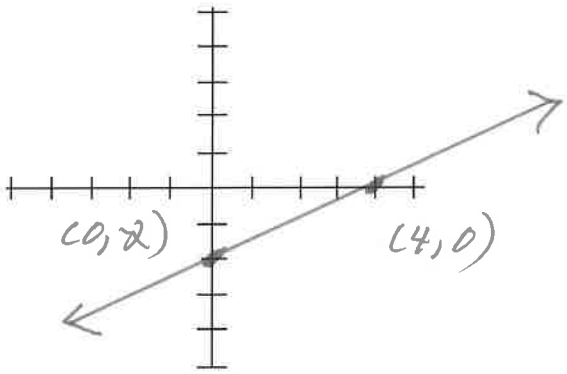
Graph the equation $3x - 6y = 12$

Plot two points and draw.

(4, 0)

(0, -2)

intercepts



Graph the equation $2x - 3(x - 4) = 2(y - 3)$

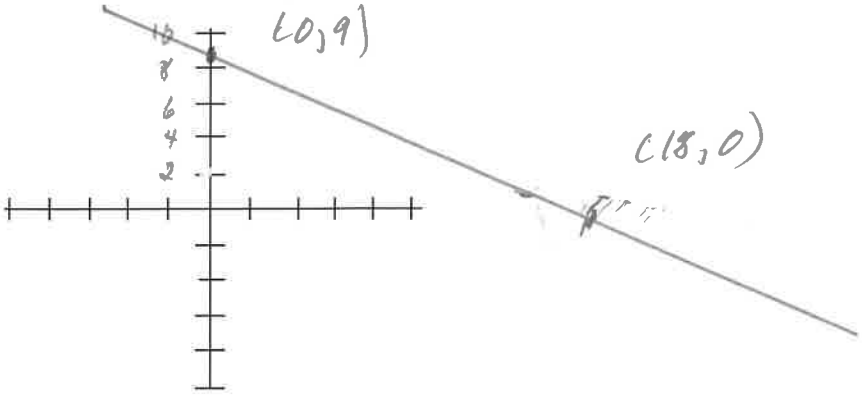
$2x - 3x + 12 = 2y - 6$

$-x - 2y = -18$

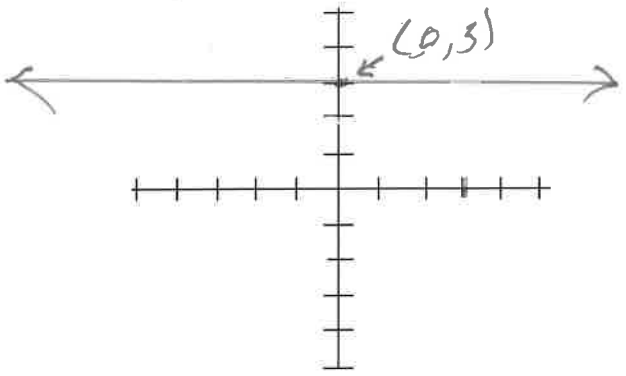
$x + 2y = 18$

(0, 9)

(18, 0)

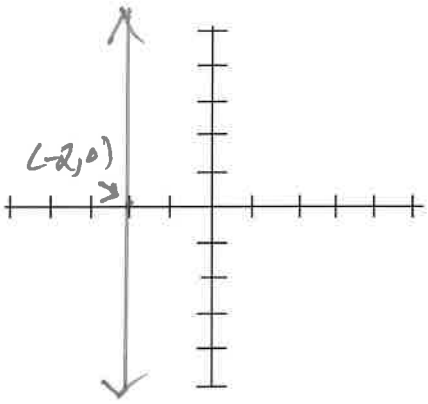


What does the graph of the equation $y = 3$ look like?



horizontal line

What does the graph of the equation $x = -2$ look like?



vertical line

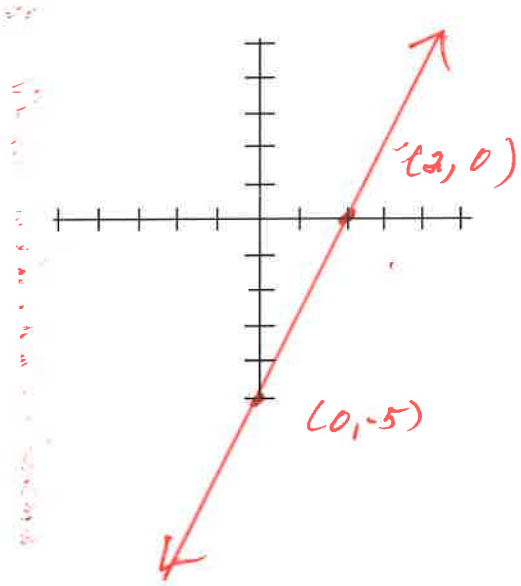
Intercepts:

The points at which the graph of an equation crosses the x-axis are called the ***x*-intercepts** and are found by setting y equal to zero and solving for x.

The points at which the graph of an equation crosses the y-axis are called the ***y*-intercepts** and are found by setting x equal to zero and solving for y.

Consider the equation $5x - 2y = 10$.

Find the x and y intercepts of the graph of this equation.



when $x = 0$,

$-2y = 10$

$y = -5$

when $y = 0$,

$5x = 10$

$x = 2$