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Review: Straight lines

We all know that an equation of a straight line in the xy-coordinate system can be written as $y=mx+b$ where m is the slope and b is the y-intercept.

Example

$y=-\frac{2}{3}x+4$ is an equation of a line

with slope $-\frac{2}{3}$ and y-intercept $(0,4)$

Another way of writing this same equation is as follows:

$$\frac{2}{3}x+y=4$$

or $$2x+3y=12$$

All of the above equations are equivalent.

If we take the point $(0,4)$, we see that it satisfies all 3 equations

If we take the point $(3,2)$, we see that it also satisfies all 3 equations

Therefore, all of the above equations represent the same line because we found more than one point that satisfied all of them.

So any equation of the form $a_1x+a_2y=c$ (linear equation) can be written in the forms of $y=mx+b$ (slope-intercept form).

Example

Write the equation $5x+2y=13$ in the slope-intercept