

2.6 Getting The Slope Of A Line From Its' Equation

For this, first you need to express the line in 'slope-intercept' form, $y = mx + c$.

The coefficient of y must equal 1, so that we can read what our value of slope, 'm', is, directly from the equation.^v

EXAMPLE:

Find the slopes of the following lines, (i) $2y = 3x + 4$, (ii) $2x + 3y = 7$, (iii) $y = \pi x + 1$.

(i)

We express the equation in the form $y = mx + c$. *The coefficient of y must be 1.*

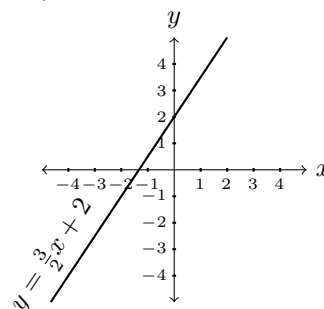
$$2y = 3x + 4$$

$$\Rightarrow \frac{2y}{2} = \frac{3x+4}{2} \quad \dots \quad (\text{dividing both sides by 2.})$$

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

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

Reading directly from the equation gives slope, $m = \frac{3}{2}$



(ii)

We express the equation in the form $y = mx + c$. *The coefficient of y must be 1.*

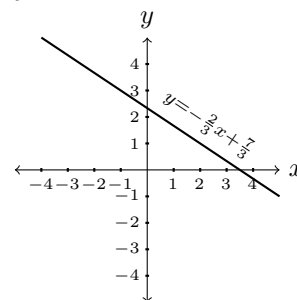
$$2x + 3y = 7$$

$$\Rightarrow 3y = -2x + 7 \quad \dots \quad (\text{subtracting } 2x \text{ from both sides.})$$

$$\Rightarrow \frac{3y}{3} = \frac{-2x+7}{3} \quad \dots \quad (\text{dividing both sides by 3.})$$

$$\Rightarrow y = -\frac{2}{3}x + \frac{7}{3}$$

Reading directly from the equation gives slope, $m = -\frac{2}{3}$



(iii)

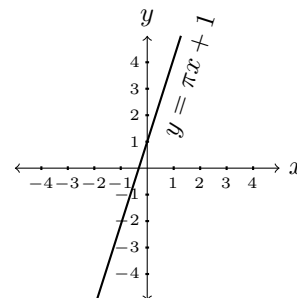
We express the equation in the form $y = mx + c$. *The coefficient of y must be 1.*

$$y = \pi x + 1$$

The line is already in the form $y = mx + c$.

We need do nothing else other than just read off its' slope. This is an example of a line with its' slope as an 'irrational' number. (See how it is graphed. You might visually estimate the slope as $m = 3.14$ - which approximately equals π .)

Reading directly from the equation gives slope, $m = \pi$



^vRemember, it's $y = mx + c$, not " $2y = mx + c$ ". In that case, we would have forgotten to divide the value of the slope by 2 and the answer we would read from the equation would actually be equal to $2m$, twice the slope!

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