

Equation of the Line: $y = mx + b$

m = slope b = y-intercept

Ex. 8: Find the slope.

$$y = -\frac{2}{3}x + 5$$

Don't include the constant term when finding slope.

$$m = -\frac{2}{3}$$

Ex. 9: Find the slope. (solve for y)

$$\begin{aligned} 3x + 4y &= 8 \\ -3x &\quad -3x \\ 4y &= -3x + 8 \\ \hline 4 &\quad 4 \\ y &= -\frac{3}{4}x + 2 \end{aligned}$$

- 1) subtract x
- 2) \div by y

$$M = -\frac{3}{4}$$

Ex. 11: Write the equation of the line: $y = -\frac{3}{4}x + 2$

Given the slope and a point.

Put m and (x, y) into $y = mx + b$, to find b .
Next, put m and b , into $y = mx + b$.

$$\begin{aligned} m &= \frac{1}{2} \\ (4, 6) &\\ y &= mx + b \\ (6) &= \frac{1}{2}(4) + b \\ 6 &= 2 + b \\ 4 &= b \end{aligned}$$

Ex. 10: Find the slope, special case.

a. $y = 2$

FoY

$M = 0$

b. $x = 5$

VUX

M is Und.

Ex. 12: Write the equation of the line:

Given two points.

$$(x_1, y_1) \text{ and } (x_2, y_2)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = -\frac{3}{2}$$

$$\begin{aligned} (2) &= -\frac{3}{2}(6) + b \\ 2 &= -9 + b \\ 11 &= b \end{aligned}$$

Equation of the Line

Standard Form \rightarrow Slope-Int form.

$$7x - y = 10$$

$$\begin{array}{r} -7x \\ \hline -y = -7x + 10 \end{array}$$

$$\begin{array}{r} -1 \quad -1 \quad -1 \\ \hline \end{array}$$

$$\boxed{y = 7x - 10}$$

1) Subtract x part

2) Divide by y part
(or -1)

Slope-Int Form \rightarrow Standard Form

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

1) Mult. by x 's denom.

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

$$\begin{array}{r} 4y = 3x + 8 \\ -3x \quad -3x \\ \hline -3x + 4y = 8 \end{array}$$

2) Subtract x part

or change all signs

$$\boxed{3x - 4y = -8}$$

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