

Algebra 2 2.2

Identify linear relations and functions

Write linear equations in standard form

linear

nonlinear

linear equation

linear function

y-intercept

x-intercept

standard form

Alg 1 Ch. 3 & 4

Linear equations

$$4x - 5y = 16$$

$$x = 10$$

$$y = -\frac{2}{3}x - 1$$

$$y = \frac{1}{2}x$$

Nonlinear equations

$$2x + 6y^2 = -25$$

$$y = \sqrt{x} + 2$$

$$x + xy = -\frac{5}{8}$$

$$y = \frac{1}{x}$$

How can we tell?

GCF $\frac{2x}{2} + \frac{8y}{2} = \frac{6}{2}$

2 Standard Form Any linear equation can be written in **standard form** $Ax + By = C$, where A , B , and C are integers with a greatest common factor of 1.

$x + 4y = 3$

KeyConcept Standard Form of a Linear Equation

Words The standard form of a linear equation is $Ax + By = C$, where A , B , and C are integers with a greatest common factor of 1, $A \geq 0$, and A and B are not both zero.

Example $3x + 5y = 12$; $A = 3$, $B = 5$, and $C = 12$

$\frac{-3x}{-1} + \frac{5y}{-1} = \frac{12}{-1}$

$3x - 5y = -12$

in order
integers
GCF/A is positive
(we want there to only be one version)

Example 3 Standard Form

Write $\frac{3}{10}x = 8y - 15$ in standard form. Identify A , B , and C .

integers
in order
(GCF)

$A =$ $B =$ $C =$

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Write each equation in standard form. Identify A , B , and C .

3A. $2y = 4x + 5$

$-4x \quad -4x$

$$\begin{array}{rcccl} -4x + 2y & = & 5 \\ \hline -1 & -1 & -1 & & \\ A & B & C & & \\ 4x - 2y & = & -5 \end{array}$$

3B. $3x - 6y - 9 = 0$

$+9 \quad +9$

$$\frac{3x}{3} - \frac{6y}{3} = \frac{9}{3}$$

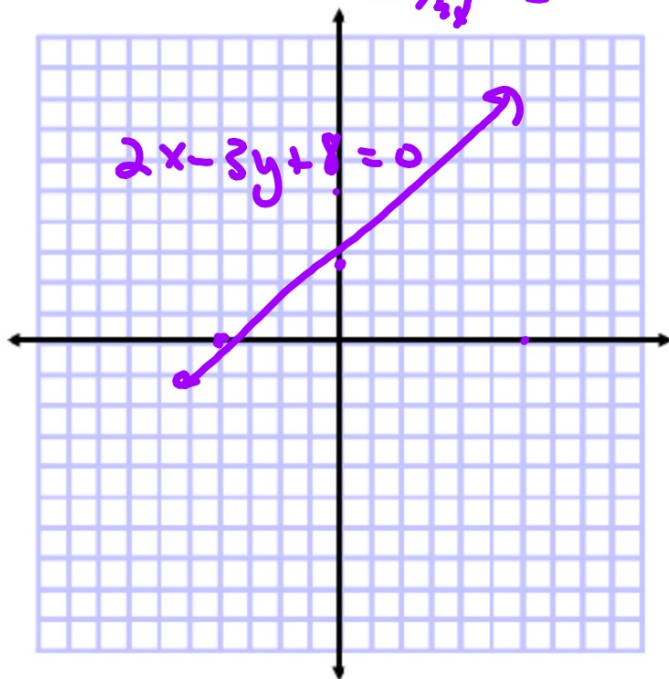
$$x - 2y = 3$$

$$A = 1 \quad B = -2 \quad C = 3$$



Example 4 Use Intercepts to Graph a Line

Find the x -intercept and the y -intercept of the graph of $2x - 3y + 8 = 0$. Then graph the equation.



TOV or x -int & y -int

$$\begin{array}{r} 2x + 8 = 0 \\ -8 \quad -8 \\ \hline 2x = -8 \\ \frac{2x}{2} = \frac{-8}{2} \\ x = -4 \end{array}$$

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4. Find the x -intercept and the y -intercept of the graph of $2x + 5y - 10 = 0$. Then graph the equation.

