

1.6 Introduction to Solving Equations

Equation: has an equal sign
 a statement that 2 expressions are equal.

Eg. in 1 variable: $12w = 10$

Eg. in 2 variables: $2x + 3y = 12$

Solving $12w - 2w = 10$ one variable

$$\begin{array}{r} 12w - 2w = 10 \\ \underline{10w = 10} \\ w = 1 \end{array}$$

check:
 $12(1) - 2(1) = 10$
 $12 - 2 = 10$
 $10 = 10 \checkmark$

Aug 27-1:18 PM

Simplify: $5 + 3x - x - 1$

combine like terms $2x + 4$

$$F = \frac{9}{5}C + 32$$

Find C when it is $86^\circ F$

$$86 = \frac{9}{5}C + 32$$

$$\begin{array}{r} 86 \\ -32 \\ \hline 54 \end{array} = \frac{9}{5}C$$

$$\frac{5}{9} \left(\frac{54}{5} \right) = \frac{9}{9} C \left(\frac{8}{9} \right)$$

$$30 = C$$

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Solve & Check:

$$\begin{array}{r}
 2x + 7 = 5x - 9 \\
 -5x \quad -5x \\
 \hline
 -3x + 7 = -9 \\
 + 7 \quad -7 \\
 \hline
 -3x = -16 \\
 + 3 \quad +3 \\
 \hline
 x = \frac{16}{3}
 \end{array}$$

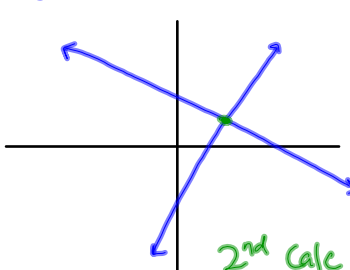
check:

$$\begin{aligned}
 2\left(\frac{16}{3}\right) + 7 &= 5\left(\frac{16}{3}\right) - 9 \\
 \frac{32}{3} + 7 &= \frac{80}{3} - 9 \\
 \frac{32}{3} + \frac{21}{3} &= \frac{80}{3} - \frac{27}{3} \\
 \frac{53}{3} &= \frac{53}{3}
 \end{aligned}$$

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Solve $3.24x - 4.09 = -7.2x + 3.65$
by graphing.

$$y_1 = 3.24x - 4.09$$

$$y_2 = -7.2x + 3.65$$


2nd Calc
option #5
First Curve → enter
Second Curve → enter
Guess → move cursor close to point, enter
 $x = 1.95$

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Solve by graphing :

$$2.24x - 6.24 = 4.26x - 8.76$$

$$y_1 = 2.24x - 6.24$$

$$y_2 = 4.26x - 8.76$$

$$x \approx 1.25$$

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Literal Equations

have 2 or more variables

$$A = \pi r^2 \quad \text{only 2 variables}$$

Solve for d:

$$\frac{ad}{12} = c \cdot 12$$

$$\frac{ad}{a} = \frac{12c}{a}$$

$$d = \frac{12c}{a}$$

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Solve for d:

$$\cancel{(a+12)} \left(\frac{ad}{\cancel{a+12}} \right) = (c) \cancel{(a+12)}$$

$$\cancel{ad} = \frac{ac + 12c}{a}$$

$$d = \frac{ac + 12c}{a}$$

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Solve for a:

Solve for b

$$\begin{array}{r} 3a - 2bc = c \\ \cancel{-3a} \quad \quad \quad -3a \\ \hline -2bc = c - 3a \\ \cancel{-2c} \quad \quad \quad -2c \\ \hline b = \frac{c - 3a}{-2c} \end{array}$$

$$3a - 2bc = c$$

$$\quad \quad \quad +2bc \quad +2bc$$

$$\frac{3a}{3} = \frac{c + 2bc}{3}$$

$$a = \frac{c + 2bc}{3}$$

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