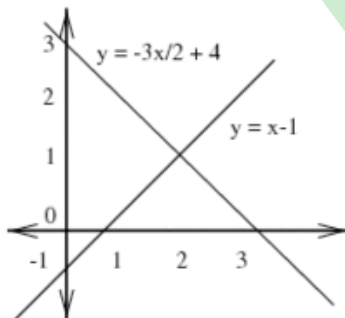


$$\begin{aligned}
 y &= x - 1 & y &= 2x + 2 \\
 x - 1 &= 2x + 2 \\
 \underline{-x} & \quad \underline{-x} \\
 -1 &= x + 2 \\
 \underline{-2} & \quad \underline{-2} \\
 -3 &= x \\
 \downarrow \\
 y &= 2x + 2 \\
 y &= 2(-3) + 2 = -4 \\
 \text{Solution: } &(-3, -4)
 \end{aligned}$$



$$\begin{aligned}
 3x - 2y &= 1 \\
 x + 2y &= 11 \rightarrow x = 11 - 2y \\
 3(11 - 2y) - 2y &= 1 \\
 33 - 6y - 2y &= 1 \\
 33 - 8y &= 1
 \end{aligned}$$

For example, consider how you would solve this system.

$$\begin{cases} 3x - y = 5 \\ 2x + 5y = -8 \end{cases}$$

Solve by graphing

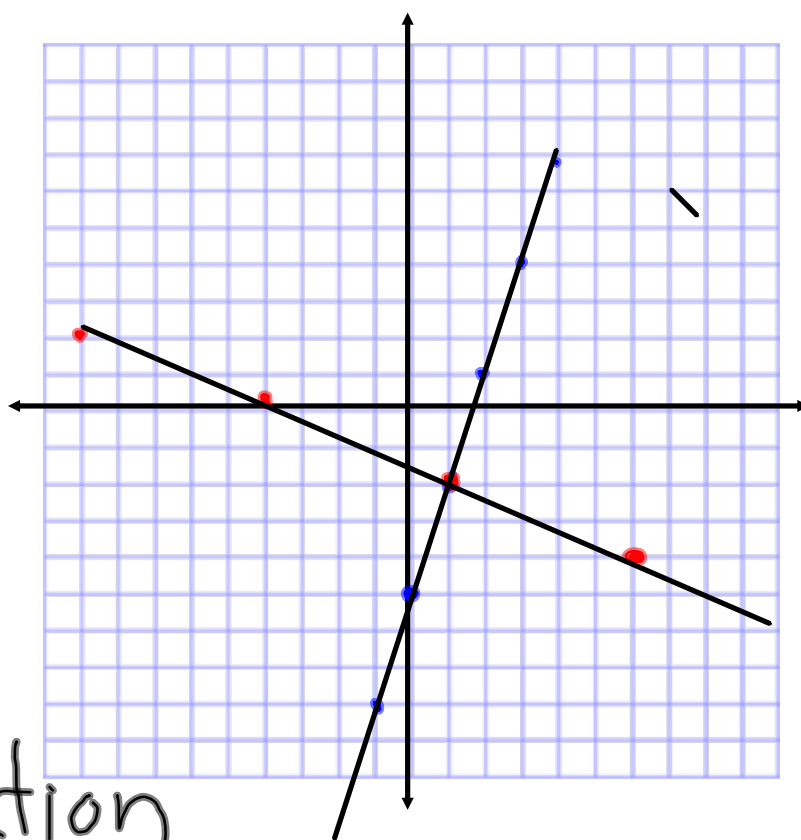
1st Write each in $y=mx+b$ form or create tables

2nd graph each equation

$$\begin{aligned} 3x - y &= 5 \\ \Rightarrow -y &= -3x + 5 \\ \Rightarrow y &= 3x - 5 \end{aligned}$$

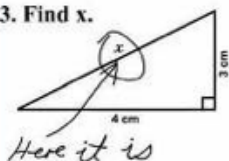
$$\begin{aligned} 2x + 5y &= -8 \\ \Rightarrow 5y &= -2x - 8 \\ \Rightarrow y &= -\frac{2}{5}x - \frac{8}{5} \end{aligned}$$

x	y ₁	y ₂
-4	-7	0
0	-5	-8/5
1	-2	-2
2	1	-4/5



Solution
(1, -2)

3. Find x.



Here it is

For example, consider how you would solve this system.

$$\begin{cases} 3x - y = 5 \\ 2x + 5y = -8 \end{cases} \Rightarrow \begin{cases} y = 3x - 5 \\ y = -\frac{2}{5}x - \frac{8}{5} \end{cases}$$

Solve by Equivalent Form

1st make each equation equal to x or equal to y

$$\begin{aligned} 3x - y &= 5 \\ \Rightarrow -y &= -3x + 5 \\ \Rightarrow y &= 3x - 5 \\ 2x + 5y &= -8 \\ \Rightarrow 5y &= -2x - 8 \\ \Rightarrow y &= -\frac{2}{5}x - \frac{8}{5} \end{aligned}$$

2nd make each equation equal to each other and solve

$$\begin{aligned} 5(3x - 5) &= -2x - 8 \\ 15x - 25 &= -2x - 8 \\ \Rightarrow 17x - 25 &= -8 \\ \Rightarrow 17x &= 17 \\ \Rightarrow x &= 1 \end{aligned}$$

3rd solve for other variable

$$\begin{aligned} y &= 3x - 5 \\ y &= 3(1) - 5 \\ y &= -2 \end{aligned}$$

Solution
(1, -2)

3 OUT OF 2
PEOPLE
HAVE
TROUBLE
WITH
FRACTIONS

For example, consider how you would solve this system.

$$\begin{cases} 3x - y = 5 \\ 2x + 5y = -8 \end{cases}$$

Solve by Substitution

1st Isolate one variable from either equation

$$\begin{aligned} 3x - y &= 5 \\ \Rightarrow -y &= -3x + 5 \\ \Rightarrow y &= 3x - 5 \end{aligned}$$

3rd solve for other coordinate

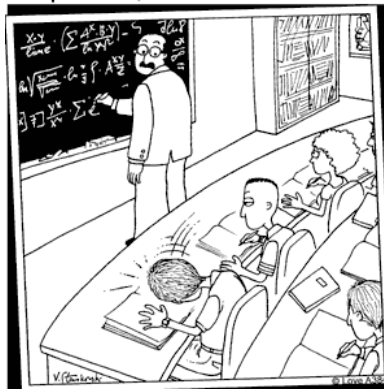
$$\begin{aligned} y &= 3x - 5 \\ y &= 3(1) - 5 \\ y &= -2 \end{aligned}$$

2nd substitute into the other equation

$$\begin{aligned} 2x + 5y &= -8 \\ 2x + 5(3x - 5) &= -8 \\ 2x + 15x - 25 &= -8 \\ 17x - 25 &= -8 \\ \Rightarrow 17x &= 17 \\ \Rightarrow x &= 1 \end{aligned}$$

$$\text{Solution} \\ (1, -2)$$

Snapshots at jasonlove.com



Professor Herman stopped when he heard that unmistakable thud -- another brain had imploded.

For example, consider how you would solve this system.

$$\begin{cases} 3x - y = 5 \\ 2x + 5y = -8 \end{cases}$$

Solve by Combination

1st Rewrite system so that one variable will be eliminated when using APE or SPE

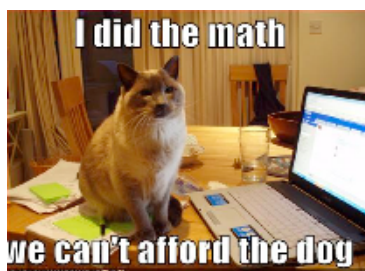
$$\begin{cases} 3x - y = 5 \\ 2x + 5y = -8 \end{cases} \Rightarrow \begin{cases} 6x - 2y = 10 \\ -6x - 15y = 24 \end{cases} \quad (\text{APE})$$

Note that an easier way would have been to multiply the first equation by 5 and then eliminate the y variable

$$\begin{array}{r} -17y = 34 \\ -17y = 34 \\ \hline y = -2 \end{array}$$

2nd solve for the other coordinate

$$\begin{array}{r} 3x - y = 5 \\ 3x - (-2) = 5 \\ 3x + 2 = 5 \\ \underline{-2 \quad -2} \\ 3x = 3 \\ \underline{3} \\ x = 1 \end{array}$$



Solution
(1, -2)