

- Home
- Realtor
- Algebra ALEKS Topics
- Algebra Notes
- Algebra Reviews
- MAT0028
- MAC1105
- MGF ALEKS Topics
- MGF Reviews
- MGF Notes
- STA2023
- Stats ALEKS Topics
- Stats Notes
- Stats Reviews

## Algebra /

### Solving a system of linear equations using elimination with addition

$$\begin{array}{r}
 3x + 6y = -9 \\
 + -3x + 2y = 17 \\
 \hline
 \end{array}$$

Point of intersection is our Solution

$y = \frac{8}{8}$

once you get one answer, plug it in!

$y = 1$

$$\begin{array}{r}
 3x + 6(1) = -9 \\
 3x + 6 = -9 \\
 3x + \cancel{6} = \cancel{-9} - 6 \\
 \hline
 3x = -15 \\
 \frac{3x}{3} = \frac{-15}{3} \\
 x = -5
 \end{array}$$

(-5, 1)

$$\begin{array}{r}
 3x + 5y = 5 \\
 -1(7x + 5y = 25) \rightarrow + -7x - 5y = -25 \\
 \hline
 \end{array}$$

Rewrite

$$\begin{array}{r}
 3x + 5y = 5 \\
 + -7x - 5y = -25 \\
 \hline
 -4x = -20 \\
 \frac{-4x}{-4} = \frac{-20}{-4} \\
 x = 5
 \end{array}$$

Plug in

$$\begin{array}{r}
 3(5) + 5y = 5 \\
 15 + 5y = 5 \\
 \cancel{15} + 5y = \cancel{5} - 15 \\
 \hline
 5y = -10 \\
 \frac{5y}{5} = \frac{-10}{5} \\
 y = -2
 \end{array}$$

(5, -2)

$$\begin{array}{r}
 -8x + 3y = 9 \\
 + 10x - 3y = -15 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 2x = -6 \\
 \frac{2x}{2} = \frac{-6}{2} \\
 x = -3
 \end{array}$$

After you get one answer plug it in!

$$\begin{array}{r}
 -8(-3) + 3y = 9 \\
 24 + 3y = 9 \\
 \cancel{24} + 3y = \cancel{9} - 24 \\
 \hline
 3y = -15 \\
 \frac{3y}{3} = \frac{-15}{3} \\
 y = -5
 \end{array}$$

(-3, -5)

#### Solving a system of linear equations using elimination with addition

Solve the following system of equations.

$$\begin{array}{r}
 -5x + 2y = 6 \\
 10x - 2y = -16 \\
 \hline
 5x = -10
 \end{array}$$

x =



$$\begin{array}{r}
 5x = -10 \\
 \frac{5x}{5} = \frac{-10}{5} \\
 x = -2
 \end{array}$$

x =

$$\begin{array}{r}
 10(-2) - 2y = -16 \\
 -20 - 2y = -16 \\
 \phantom{-20} + 20 \phantom{-2y} = \phantom{-16} + 20
 \end{array}$$

y =



$$(-2, -2)$$

$$\begin{aligned} -2y &= 4 \\ \frac{-2y}{-2} &= \frac{4}{-2} \\ y &= -2 \end{aligned}$$

Note: The Solve feature is not available to st

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