

Topic: Solving three ways

Question: Which of the following does not show solving by substitution?
The steps are not explained, so you'll need to figure out what was done in each step.

Answer choices:

A

$$\begin{array}{l} y = x - 3 \\ y = 4x - 9 \\ \hline x - 3 = 4x - 9 \\ 3x = 6 \\ x = 2 \end{array}$$

B

$$\begin{array}{l} y = x - 3 \\ y = 4x - 9 \\ \hline 0 = -3x + 6 \\ 3x = 6 \\ x = 2 \end{array}$$

C

$$\begin{array}{l} y = x - 3 \\ y = 4x - 9 \\ \hline x = y + 3 \\ y = 4(y + 3) - 9 \\ y = 4y + 12 - 9 \\ y = 4y + 3 \\ -3y = 3 \\ y = -1 \end{array}$$

D

$$\begin{array}{l} y = x - 3 \\ y = 4x - 9 \\ \hline x = \frac{y + 9}{4} \\ y = \frac{y + 9}{4} - 3 \\ 4y = y + 9 - 12 \\ 3y = -3 \\ y = -1 \end{array}$$



Solution: B

Looking at answer choice B,

$$\begin{array}{r} y = x - 3 \\ y = 4x - 9 \\ \hline 0 = -3x + 6 \end{array}$$

this first step consisted of subtracting the second equation from the first equation, so this is solving by elimination, not substitution.



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Question: To solve the system by elimination, which of these would not be a useful first step?

$$5x + y = 13$$

$$x - 2y = 7$$

Answer choices:

- A Multiply the second equation by -5 .
- B Multiply the first equation by 2 .
- C Subtract the second equation from the first.
- D Divide the second equation by 2 .



Solution: C

If you did the step in answer choice A, you'd have the following system of equations:

$$5x + y = 13$$

$$-5x + 10y = -35$$

You could then add the two equations and eliminate x . So this would be a useful first step.

If you did the step in answer choice B, you'd have the following system of equations:

$$10x + 2y = 26$$

$$x - 2y = 7$$

You could then add the two equations and eliminate y . So this would be a useful first step.

If you did the step in answer choice C, you'd have the following equation:

$$5x + y - x + 2y = 13 - 7$$

$$4x + 3y = 6$$

At this point there's no single step that could be done to eliminate x or y , so this wouldn't be a useful first step.

If you did the step in answer choice D, you'd have the following system of equations:



$$5x + y = 13$$

$$\frac{1}{2}x - y = \frac{7}{2}$$

You could then add the two equations and eliminate y . So this would be a useful first step.

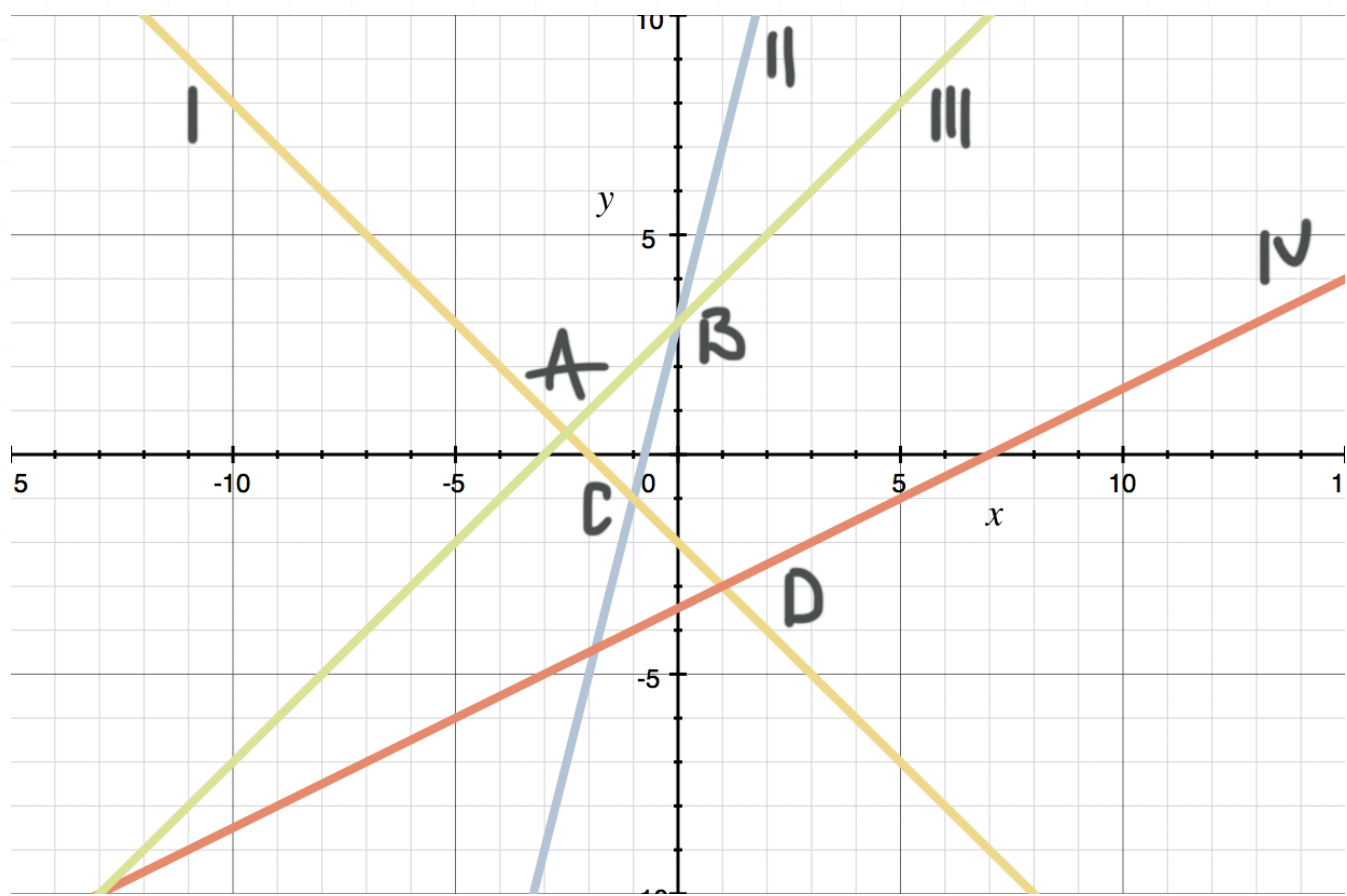


Topic: Solving three ways

Question: Which labeled point in the graph would represent the solution to the system shown below?

$4x - y = -3$

$x + y = -2$



Answer choices:

- A

Point A
- B

Point B
- C

Point C
- D

Point D



Solution: C

One way to figure this out is to rewrite the two equations in slope-intercept form, and then see which two intersecting graphs belong to those equations. Rewriting $4x - y = -3$ gives

$$y = 4x + 3$$

This line has a slope of 4 and a y -intercept of 3. This is Graph II. Rewriting $x + y = -2$ gives

$$y = -x - 2$$

This line has a slope of -1 and a y -intercept of -2 . This is Graph I.

Graphs I and II meet at point C, $(-1, -1)$.

