Bellwork:

Solve:

1) $\frac{2x}{5} + \frac{3}{2} = 1$

2) $\frac{3x+1}{3} = \frac{-x+2}{4}$

Solve the System by Substitution:

3) $\begin{cases} x = 3y \\ 2x - y = 40 \end{cases}$

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

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Homework Questions???

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Chapter 5.3(a) Solving Systems by Elimination

Solve systems of linear equation in two variables by elimination.

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What are the two methods of solving a system of linear equations we have learned?

Graphing Substitution

Today we are going to learn the last method for solving a system:

Elimination (sometimes called combination or addition)

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Elimination is a method that combines the systems leaving one equation with one variable (the second variable is eliminated).

$\begin{cases} 3x + 2y = 7 \\ + \quad x - 2y = -11 \end{cases}$

$4x = -4$

$x = -1$

$(-1) - 2y = -11$

$+1 \quad +1$

$-2y = -10 \quad y = 5$

Remember to keep the equations balanced.

Since 2y and -2y have opposite coefficients; y can be eliminated by adding the two equations.

$(-1, 5)$

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Solving Systems of Equations by Elimination

Step 1: Write both equations in standard form (Ax + By = C)

Step 2: Eliminate one of the variables and solve.

Step 3: Substitute the value of step 2 into one of the original equations and solve.

Step 4: Write the answers as an ordered pair (x, y) and check your answer.

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Example 1: Solve by Elimination

$\begin{cases} 3x - 4y = 10 \\ x + 4y = -2 \end{cases}$

Step 1: (Ax + By = C)

Step 2: Eliminate

Step 3: Substitute Value in Original

Step 4: (x, y) and check

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Example 2: Solve by Elimination

$\begin{cases} 2x + y = -5 \\ 2x - 5y = 13 \end{cases}$

Step 1: (Ax + By = C)

Step 2: Eliminate Variable

Step 3: Substitute Value in Original

Step 4: (x, y) and check

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Example 3: Solve by Elimination

$\begin{cases} x + 3y = 7 \\ x - 4y = 14 \end{cases}$

Step 1: (Ax + By = C)

Step 2: Eliminate Variable

Step 3: Substitute Value in Original

Step 4: (x, y) and check

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Example 4: Solve by Elimination

$\begin{cases} 2x + y = 25 \\ 3y = 2x - 13 \end{cases}$

Step 1: (Ax + By = C)

Step 2: Eliminate Variable

Step 3: Substitute Value in Original

Step 4: (x, y) and check

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Example 5: Solve by Elimination

$\begin{cases} x + 2y = 11 \\ -3x + y = -5 \end{cases}$

Step 1: (Ax + By = C)

Step 2: Eliminate Variable

Step 3: Substitute Value in Original

Step 4: (x, y) and check

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Example 6: Solve by Elimination

$\begin{cases} -2x + y = 9 \\ 3x + 2y = 12 \end{cases}$

Step 1: (Ax + By = C)

Step 2: Eliminate Variable

Step 3: Substitute Value in Original

Step 4: (x, y) and check

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What kind of coefficients are needed before you can eliminate a variable?

Opposites

-3 & 3

-5 & 5

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Homework

P. 347-348 #1-6, 11-16, 22 (all)

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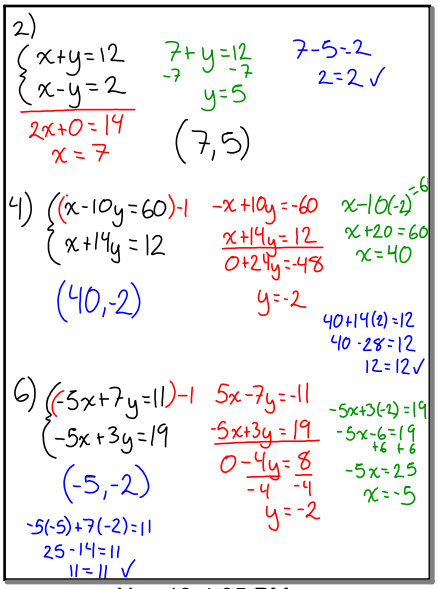

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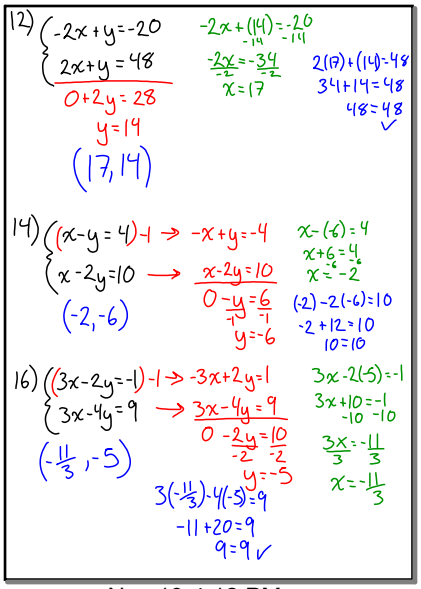

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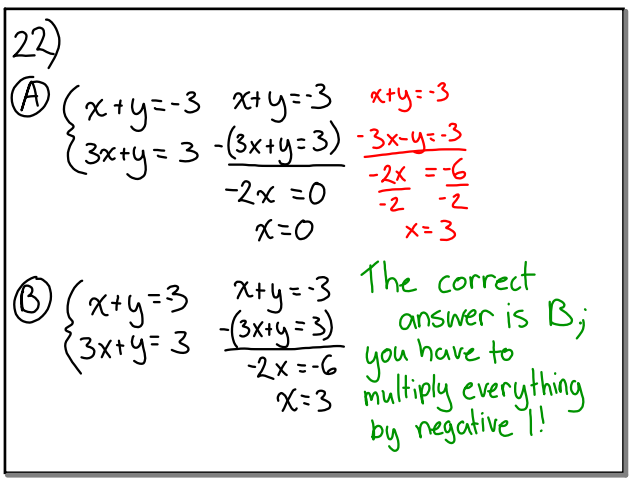

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