# 2 Elimination (8.2)

November 26, 2019 9:43 PM

#### PRE-CALCULUS 11 Chapters 8-9 – Day 3: SOLVING SYSTEMS OF EQUATIONS ALGEBRAICALLY (Part 2)

### SOLVING SYSTEMS ALGEBRAICALLY

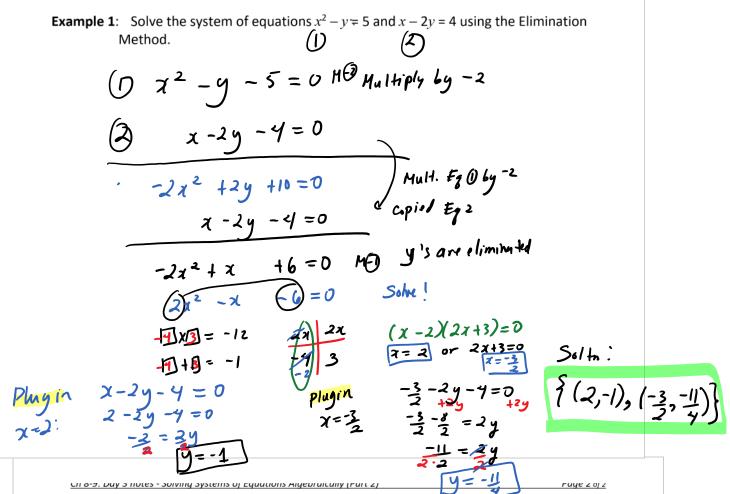
The solution of a system of equations can be solved algebraically:

• with the substitution method, or with the *elimination method*. NOTE!

## SOLVING SYSTEMS OF EQUATIONS WITH THE ELIMINATION METHOD

To solve a system of equations algebraically using The Elimination Method:

- Write both equation so that like-terms line up.
- 2. *Eliminate* one of the variables by adding (subtracting) the equations; all the terms of one of the variables must be eliminated.
  - a. The coefficients of the eliminated terms must have opposite (equal) values.
  - <u>b. It may be necessary</u> to multiply one or both equations to get suitable coefficients.
- 3. Solve this equation; find the roots the values of this first variable.
- 4. Substitute each of these roots into an equation with both variables.
- 5. Solve these equations; find the value of the second variable.



Example 2: Solve using The Elimination Method. Find the exact values.

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**Example 2**: Solve using The Elimination Method. Find the exact values.

$$x^{2} - 4x - y + 2 = 0 \text{ and} 
3x + 2y - 11 = 0 
x^{2} - \frac{1}{x} - y + 2 = 0 \quad M@ \quad Line up \ linke \ terms.' 
3x + 2y - 11 = 0 
2x^{2} - 8x - 2y + 4 = 0 
3x + 2y - 11 = 0 
2x^{2} - 5x - 7 = 0 
M@ = \frac{xx}{2x} - 7 = 0 
M@ = \frac{xx}{2} - 7 \\
(x+1)(2x-7)=0 \\
x = -1 \text{ or } x = \frac{7}{2} \\
Plug in \ to \\ y = 7 \quad y = \frac{1}{4} \\
f(-1,7)_{2} \quad (\frac{3}{2}, \frac{1}{4}) \\
f(-1,7)_{3} \quad (\frac{3}{2}, \frac{1}{4}) \\$$

Assignment: Sec 8.2, p. 452 #4-7, 18, 23, 24

exercise: Solve using The Elimination Method. Find the exact values.

a) $x^2 - 6y + 6 = 0$ and	b) $x^2 - 3y + 6 = 0$ and
$3x^2 - 18y - 72 = 0$	$-2x^2 + 6y - 12 = 0$

c)  $2x^2 - 7x - y + 3 = 0$  and  $-x^2 + 6x - y - 7 = 0$ 

Solutions: a) Hmm, what do you conclude? B) Hmm, what do you conclude? c)  $\{(1, -2), (\frac{10}{3}, \frac{17}{9})\}$ 

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exercise: Solve using The Elimination Method. Find the exact values.

a) 
$$x^2 - 4x - y + 2 = 0$$
  
 $3x + 2y - 11 = 0$ 
b)  $x^2 + 2x - 2y + 6 = 0$   
 $2x^2 + 4x - y + 3 = 0$ 

x = -1 and y = 7 or  $x = \frac{7}{2}$  and  $y = \frac{1}{4}$  x = 0 and y = 3 or x = -2 and y = 3

c)  $x^2 - 2y - 6 = 0$  $2x^2 - 4y + 3 = 0$ d)  $-x^2 + 2y$  $2x^2 - 4y + 3 = 0$ 

d) 
$$-x^2 + 2y + 6 = 0$$
  
 $2x^2 - 4y - 12 = 0$ 

no solution

infinitely many solutions

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