

Name \_\_\_\_\_  
Date \_\_\_\_\_

MTH 098-184  
Class #15

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***Linear Equations – Systems – Solution by Substitution***

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Quality – Accuracy – Transfer – 100%

**Section 1. Some Arithmetic**

1. Resolve the linear equation:  $5x + 4y = 15$  for  $x = \frac{23}{16}$  and  $y = \frac{125}{64}$

NOTES:

2. Resolve the linear equation:  $3x + 5y = 11$  for  $x = \frac{4}{5}$  and  $y = \frac{43}{25}$

NOTES:

**Section 2. Preparing to Solve Linear Systems by the “Substitution Technique”**

1. Our second technique for solving systems of linear equations algebraically is to use Substitution

- a. Consider the linear system:  $4x + 3y = 27$   
 $y = 2x + 1$

- b. Decide which Equation is the “DEFINITION” of one variable in terms of another.

\*\*Look for  $y = \underline{\hspace{2cm}}$  or  $x = \underline{\hspace{2cm}}$

- c. Replace the DEFINITION equation into the other equation. Distribute, and combine like terms. Find the second variable in the definition equation and check into the second equation.

- d. Solve the System of Equations:  $4x + 3y = 27$   
 $y = 2x + 1$

## 2. More Fun with Substitution

- a. Consider the linear system:
- $$\begin{aligned}4x + 3y &= 26 \\x + 2y &= 2\end{aligned}$$
- b. Decide which Equation contains the "SINGLETON". Re-Arrange that Equation for the DEFINITION.
- \*\*Look for a single  $y =$  \_\_\_\_\_ or a single  $x =$  \_\_\_\_\_
- c. Replace the DEFINITION equation into the other equation. Distribute, and combine like terms. Find the second variable in the definition equation and check into the second equation.
- d. Solve the System of Equations:
- $$\begin{aligned}4x + 3y &= 26 \\x + 2y &= 2\end{aligned}$$

## Section 3. Practice: Solve and Check the Following:

1. 
$$\begin{aligned}r &= -3s \\3r + 4s &= -10\end{aligned}$$

2. 
$$\begin{aligned}x &= y - 2 \\x + y &= 18\end{aligned}$$

3.  $y = 3x - 1$   
 $7x + 2y = 37$

4.  $3x - y = 1$   
 $x + 2y = 12$

5.  $2x = 3y$   
 $4x - 3y = 12$

6.  $x + y = 500$   
 $y = 1.5x$

## Homework Section

Section(s)	Page(s)	Problem(s)
9.2	566 → 567	5 → 29 E.O.O.*

\*E.O.O. Means "Every Other Odd"