

Section 5.2 Notes (Introduction):  
Solving Systems of Linear Equations by Using Substitution

Key Concept:

Solving a System of Linear Equations by Using Substitution

- Step 1: Solve one of the equations for one of the variables.
- Step 2: Substitute the expression from Step 1 into the other equation and solve for the other variable.
- Step 3: Substitute the value from Step 2 into one of the original equations and solve.
- Step 4: Write the ordered pair based off the x and y-values you found in Steps 2 and 3.
- Step 5: Check your solution in both equations.

Example 1:

$$x = 4$$

$$y = 3x - 7$$

$$y = 3(4) - 7$$

$$y = 12 - 7$$

$$y = 5$$

Step 5: Check (4, 5)

$$x = 4$$
$$4 = 4 \checkmark$$

$$y = 3x - 7$$
$$5 = 3(4) - 7$$
$$5 = 12 - 7$$
$$5 = 5 \checkmark$$

Solution = (4, 5)  
(x, y)

Example 2:

$$y = 9$$

$$2x - y = -5$$

$$2x - 9 = -5$$

$$+9 \quad +9$$

$$2x = 4$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

Step 5: Check (2, 9)

$$y = 9$$
$$9 = 9 \checkmark$$

$$2x - y = -5$$
$$2(2) - 9 = -5$$
$$4 - 9 = -5$$
$$-5 = -5 \checkmark$$

Solution = (2, 9)  
(x, y)