Lesson 3 – Solving a System with Substitution

Substitution Method

1. Solve one of the equations for one of its variables.
2. Substitute this expression into the other equation and solve for the other variable.
3. Substitute this value into either equation and solve.
4. Check the solution in each of the original equations.

Example

Solve: $3x + 4y = 15 \; and \; x - y = 5$

Step 1: Isolate *x* in the second equation

Step 2: Substitute into the first equation.

Step 3: Solve for *y*.

Step 4: Substitute *y* = 0 into one of the two equations and solve for the other variable.

Example 2

Solve $\frac{x}{3}+\frac{y}{6}=\frac{1}{2}$ and $3x+2y=4$

Step 1: Get rid of the fractions in equation one by multiplying by 6.

Step 2: Isolate *y* in the first equation

Step 3: Substitute into the second equation.

Step 4: Solve for *x*.

Step 5: Substitute *y* = 2 into one of the two equations and solve for the other variable.

Example 3

Solve the system: $0.04x - 0.6y = 40 \ \ and \ \ x + y = 6000$

Extra Practice

Solve the system: $x + y = 8 \ \ and \ \ x - 3y = 4$

Assignment: Pg. 425; 4, 5, 8a, 19 (a,b), 20 b