

## 2x2 Substitution

Ex)  $x - 2y = 0$   
 $3x - y = 5$

$$\begin{array}{r} x - 2y = 0 \\ +2y \quad +2y \\ \hline x = 2y \end{array}$$

$$3(2y) - y = 5$$

$$6y - y = 5$$

$$\frac{5y}{5} = \frac{5}{5}$$

$$y = 1$$

$$(2, 1)$$

Step 1: Get a variable by its self.

Step 2: Put new eq. into the other eq.

Step 3: Solve for the variable

Step 4: Plug variable into revised eq.

$$x = 2(1)$$

$$x = 2$$

Ex)  $2x + 4y = -10$   
 $3x + 3y = -3$

$$\begin{array}{r} 3x + 3y = -3 \\ -3y \quad -3y \\ \hline 3x = -3 \end{array}$$

$$\frac{3x}{3} = \frac{-3y - 3}{3}$$

$$x = -y - 1$$

$$2(-y - 1) + 4y = -10$$

$$\begin{array}{r} -2y \quad -2 \quad +4y = -10 \\ +2 \quad \quad \quad +2 \end{array}$$

$$-2y + 4y = -8$$

$$\frac{2y}{2} = \frac{-8}{2}$$

$$y = -4$$

$$(3, -4)$$

$$x = 4 - 1$$

$$x = 3$$

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2<sup>5</sup>, 30, 31