

7.3 Solving Systems by Elimination (Day 1)

$$Ax + By = C$$

↓ get rid of a variable

coefficient
any # before variable

Ex 1

$$5x - 6y = -32$$

$$\oplus \quad 3x + 6y = 48$$

$$\begin{array}{r} 8x \quad 0y \quad 16 \\ \hline 8x = 16 \\ \hline 8 \quad 8 \\ \hline X = 2 \end{array}$$

$$\begin{array}{l} 3(2) + 6y = 48 \\ -6 + 6y = 48 \\ \hline 6y = 42 \\ \hline 6 \quad 6 \\ \hline y = 7 \end{array}$$

$$5(2) - 6y = -32$$

$$\begin{array}{r} -10 - 6y = -32 \\ \hline -10 \quad -10 \end{array}$$

$$\begin{array}{r} -6y = -42 \\ \hline -6 \quad -6 \end{array}$$

$$Y = 7$$

SOLUTION
(2, 7)

Ex2

$$\begin{array}{r} -3x + 5y = -1 \\ \ominus 2x + 5y = 4 \\ \hline -5x \quad 0y = -5 \end{array}$$

-3-2

$$\frac{-5x}{-5} = \frac{-5}{-5}$$

x=1

Same Sign
Subtract

(otherwise Add)

$$\begin{array}{r} 2(1) + 5y = 4 \\ 2 + 5y = 4 \\ -2 \quad -2 \\ \hline 5y = 2 \\ \frac{5y}{5} = \frac{2}{5} \\ y = 0.4 \end{array}$$

Solution (1, 0.4)

Ex3

$$\begin{array}{r} 8x + 13y = -8 \\ \ominus 8x + 15y = -56 \\ \hline 0x - 2y = 48 \end{array}$$

$$\frac{-2y}{-2} = \frac{48}{-2}$$

y = -24

$$\begin{array}{r} 8x + 13(-24) = -8 \\ 8x - 312 = -8 \\ +312 \quad +312 \\ \hline 8x = 304 \\ \frac{8x}{8} = \frac{304}{8} \\ x = 38 \end{array}$$

SOLUTION
(38, -24)

Ex4

$$\begin{array}{r} 4x + 5y = 7 \\ \ominus 4x + 5y = 3 \\ \hline \cancel{4x} \quad \cancel{5y} \quad 4 \end{array}$$

0 = 4

No Solution