

7.3 Solve by Add/Subtract

* Elimination or mafia

Goal is to add or subtract the equations to eliminate x or y .

Example

$$\begin{array}{r} \textcircled{1} \quad 2x + 3y = 11 \\ + \quad -2x + 5y = 13 \\ \hline \end{array}$$

$$\begin{array}{r} 2x + -2x = 0 \\ 3y + 5y = 8y \\ 11 + 13 = 24 \end{array}$$

$$\frac{8y = 24}{8} = \frac{24}{8}$$

$$y = 3$$

} Look at top & bottom equations.
 x 's eliminate because
 $2x + -2x = 0$

} To get x , plug $y = 3$ into either equation

$$2x + 3(3) = 11$$

$$\begin{array}{r} 2x + 9 = 11 \\ -9 \quad -9 \end{array}$$

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

$$x = 1$$

$$(1, 3)$$

$$4x + 3y = 2$$

$$5x + 3y = -2$$

} Need to add to
eliminate y's
3y $\hat{=}$ 3y
↑
make -3y
3y \cdot ? = -3y
-1

Rewrite both

$$4x + 3y = 2$$

$$+ -5x - 3y = 2$$

$$\frac{-1x}{-1} = \frac{4}{-1}$$

$$x = -4$$

} plug in $4x + 3y = 2$ or
 $5x + 3y = -2$

Homework

p447: 3-12 mult 3, 18, 21

$$\textcircled{3} \begin{cases} x + 2y = 13 \\ -x + y = 5 \end{cases}$$

$$\textcircled{6} \begin{cases} 3x - y = 30 \\ -3x + 7y = 6 \end{cases}$$

$$\textcircled{9} \begin{cases} x + y = 1 \\ -2x + y = 4 \end{cases}$$

$$\textcircled{12} \begin{cases} 6x + y = -10 \\ 5x + y = -10 \end{cases}$$

$$\textcircled{18} \begin{cases} 2x - y = -11 \\ y = -2x - 13 \end{cases}$$

$$\textcircled{21} \begin{cases} -5x + y = -23 \\ -y = 3x - 9 \end{cases}$$