7 - 3
Elimination Using Addition and Subtraction

Ex:

$$3x - 5y = -16$$
$$+\quad 2x + 5y = 31$$

$$\frac{5x}{5} = \frac{15}{5}$$

$$x = 3$$

$$(3, 5)$$

$$-2(3) + 5y = 31$$
$$-6 \qquad -6$$
$$\frac{5y}{5} = \frac{25}{5}$$
$$y = 5$$

Ex:

$$5x + 2y = 6$$
$$- \quad 9x + 2y = 22$$

$$\frac{-4x}{-4} = \frac{-16}{-4}$$

$$x = 4$$

$$(4, -7)$$

$$5(4) + 2y = 6$$
$$-20 \qquad -20$$

$$\frac{2y}{2} = \frac{-14}{2}$$

$$y = -7$$

Ex: Twice one number added to another number is 18. Four times the first number minus the other number is 12. Find the numbers.

$$2x + y = 18$$

$$+ \quad 4x - y = 12$$

$$6x = 30$$

$$x = 5$$

$$2(5) + y = 18$$
$$-10 \qquad -10$$

$$y = 8$$

$$(5, 8)$$

Ex: $-3x + 4y = 12$

$+$ $3x - 6y = 18$

$$\frac{-2y}{-2} = \frac{30}{-2}$$

$$Y = -15$$

$$(-24, -15)$$

$$-3x + 4(-15) = 12$$

$$-3x - 60 = 12$$

$$+60 \quad +60$$

$$\frac{-3x}{-3} = \frac{72}{-3} \quad x = -24$$

Homework:

p. 385 #12 - 22 even