

Pg 143  
 3,2 Systems of Equations

Substitution  
 Ex#1  $y = 65x - 145$   
 $y = 48x + 500$

$$\begin{array}{r} 65x - 145 = 48x + 500 \\ -48x \quad -48x \\ \hline 17x - 145 = 500 \\ +145 \quad +145 \\ \hline 17x = 645 \\ \frac{17x}{17} = \frac{645}{17} \\ x = 37.9 \end{array}$$

$y = 65x - 145$   
 $y = 65(37.9) - 145$   
 $2463.65 - 145$   
 $y = 2318.65$

$(37.9, 2318.65)$   
 $x \quad y$

1A:  $5x - 3y = 23$   
 $2x + y = 7$   
 $-2x \quad -2x$

$$\begin{array}{r} 5x - 3y = 23 \\ 2x + y = 7 \\ -2x \quad -2x \\ \hline y = -2x + 7 \end{array}$$

$5x - 3(-2x + 7) = 23$   
 $5x + 6x - 21 = 23$   
 $11x = 44$   
 $x = 4$

$y = -2(4) + 7$   
 $-8 + 7$   
 $y = -1$

$(4, -1)$

ELIMINATION

Ex#2:  $5x + 8y = -19$   
 $1) 8x + 3y = +25$

$$\begin{array}{r} 5x + 8y = -19 \\ 8x + 3y = +25 \\ -3x = 6 \\ \frac{-3x}{-3} = \frac{6}{-3} \end{array}$$

$x = -2$

$5x + 3y = 19$   
 $5(-2) + 3y = 19$   
 $-10 + 3y = 19$   
 $+10 \quad +10$   
 $3y = 29$   
 $\frac{3y}{3} = \frac{29}{3}$   
 $y = -3$

$(-2, -3)$

1B:  $x - 7y = 11$   
 $5x + 4y = -23$

$$\begin{array}{r} x - 7y = 11 \\ +7y + 7y \\ \hline x = 7y + 11 \end{array}$$

$5(7y + 11) + 4y = -23$   
 $35y + 55 + 4y = -23$   
 $39y + 55 = -23$   
 $-55 \quad -55$   
 $39y = -78$   
 $\frac{39y}{39} = \frac{-78}{39}$   
 $y = -2$

$x = 7y + 11$   
 $7(-2) + 11$   
 $-14 + 11$   
 $x = -3$

$(-3, -2)$

2A)  $4x - 3y = -22$   
 $2x + 3y = 16$

$$\begin{array}{r} 4x - 3y = -22 \\ 2x + 3y = 16 \\ \hline 2x = \frac{16}{2} \end{array}$$

$x = 8$

$2x + 3y = 16$   
 $2(8) + 3y = 16$   
 $16 + 3y = 16$   
 $-16 \quad -16$   
 $3y = 0$   
 $\frac{3y}{3} = \frac{0}{3}$   
 $y = 0$

$(8, 0)$

Ex#4:  $5x + 6y = 45$   
 $-5x - 6y = 38$

$$\begin{array}{r} 5x + 6y = 45 \\ -5x - 6y = 38 \\ \hline 0 = 83 \end{array}$$

No Soln

4b)  $2x + 3y = 5$   
 $4x + 9y = 15$   
 $-6x - 9y = 15$

$$\begin{array}{r} 2x + 3y = 5 \\ 4x + 9y = 15 \\ -6x - 9y = 15 \\ \hline 0 = 0 \end{array}$$

Inf. Many Soln

Pg 143  
3.2 Systems of Equations

Substitution:

Ex #1  $y = 65x - 145$   
 $y = 48x + 500$   
 $65x - 145 = 48x + 500$   
 $-48x \quad -48x$

$17x - 145 = 500$   
 $+145 \quad +145$

$\frac{17x}{17} = \frac{645}{17}$

$x = 37.9$

$y = 65x - 145$   
 $y = 65(37.9) - 145$   
 $2463.05 - 145$

$y = 2318.5$

$(37.9, 2318.5)$   
 $-x \quad y$

1B.  $x - 7y = 11$   
 $5x + 4y = -23$

$x - 7y = 11$   
 $+7y \quad +7y$   
 $x = 7y + 11$

$5(7y + 11) + 4y = -23$   
 $35y + 55 + 4y = -23$   
 $39y + 55 = -23$   
 $-55 \quad -55$

$39y = -78$   
 $\frac{39y}{39} = \frac{-78}{39}$

$y = -2$

$(-3, -2)$

$x = 7y + 11$   
 $7(-2) + 11$   
 $-14 + 11$   
 $x = -3$

2A)  $4x - 3y = -22$   
 $2x + 3y = 16$

$\frac{1}{2}x = \frac{-6}{2} \quad (-1, 6)$

$x = -1 \quad 2x + 3y = 16$

$\frac{3y}{3} = \frac{18}{3}$   
 $y = 6$   
 $2(-1) + 3y = 16$   
 $-2 + 3y = 16$   
 $+2 \quad +2$

Ex #4  $5x + 6y = 45$   
 $-5x - 6y = 38$

$0 = 83$   
 No Soln

4b)  $2x + 3y = 5$   
 $6x + 9y = 15$   
 $-6x - 9y = -15$   
 $0 = 0$

Inf. Many Soln

1A:  $5x - 3y = 23$   
 $2x + y = 7$   
 $-2x \quad y \quad -2x$

$y = -2x + 7$

$5x - 3(-2x + 7) = 23$

$5x + 6x - 21 = 23$   
 $+21 \quad +21$

$\frac{11x}{11} = \frac{44}{11}$

$x = 4$

$(4, -1)$

$y = -2x + 7$   
 $-2(4) + 7$   
 $-8 + 7$   
 $y = -1$

ELIMINATION

Ex #2:  $5x + 5y = -19$   
 $(-1) 8x + 3y = +25$

$\frac{-3x}{-3} = \frac{6}{-3}$

$x = -2$

$(-2, -3)$

$5x + 3y = -19$   
 $5(-2) + 3y = -19$   
 $-10 + 3y = -19$   
 $+10 \quad +10$   
 $3y = -9$   
 $\frac{3y}{3} = \frac{-9}{3}$   
 $y = -3$