

8

$$\begin{aligned}
 5x - 3y &= 17 && \text{multiplier 2} \\
 3x + 2y &= 14 && \text{multiplier 3} \\
 10x - 6y &= 34 \\
 9x + 6y &= 42 \\
 \hline
 19x &= 76
 \end{aligned}$$

~~$$\begin{aligned}
 19x &= 76 \\
 \frac{19x}{19} &= \frac{76}{19} \\
 x &= 4
 \end{aligned}$$~~

$$\begin{aligned}
 3x + 2y &= 14 \\
 3(4) + 2y &= 14 \\
 12 + 2y &= 14 \\
 2y &= 14 - 12 \\
 2y &= 2 \\
 y &= \frac{2}{2} \\
 y &= 1
 \end{aligned}$$

(4, 1)

$$\begin{bmatrix} 5 & -3 & 17 \\ 3 & 2 & 14 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & 4 \\ 0 & 1 & 1 \end{bmatrix}
 \begin{array}{l} \rightarrow x \\ \rightarrow y \end{array}$$

9.

$$\begin{aligned}
 -7x &= 3y - 20 \\
 4y &= 18 - 5x \\
 \hline
 -7x - 3y &= -20 && \text{R4} \\
 5x + 4y &= 18 && \text{R3} \\
 \hline
 -28x - 12y &= -80 \\
 15x + 12y &= 54 \\
 \hline
 -13x &= -26 \\
 \frac{-13x}{-13} &= \frac{-26}{-13}
 \end{aligned}$$

$$\begin{aligned}
 x &= 2 \\
 4y &= 18 - 5x \\
 4y &= 18 - 5(2) \\
 4y &= 18 - 10 \\
 4y &= 8 \\
 \frac{4y}{4} &= \frac{8}{4} \\
 y &= 2
 \end{aligned}$$

(2, 2)

$$\begin{bmatrix} -7 & -3 & -20 \\ 5 & 4 & 18 \end{bmatrix}$$

$$\begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 2 \end{bmatrix}
 \begin{array}{l} \rightarrow x \\ \rightarrow y \end{array}$$

10

$$8x + 4y = 3 \quad y = -2x + 5$$

$$\begin{aligned}
 8x + 4(-2x + 5) &= 3 \\
 8x - 8x + 20 &= 3 \\
 20 &= 3
 \end{aligned}$$

NO SOLUTION

$$\begin{bmatrix} 8 & 4 & 3 \\ 2 & 1 & 5 \end{bmatrix} \rightarrow \begin{bmatrix} 1 & \frac{1}{2} & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

LAST ROW  
[0 0 1]  
NO SOL.

11

$$8x + 2y = 6 \quad y = -4x + 3$$

$$\begin{aligned}
 8x + 2(-4x + 3) &= 6 \\
 8x - 8x + 6 &= 6 \\
 6 &= 6
 \end{aligned}$$

"INFINITE SOLUTIONS"

$$\{(x, y) \mid y = -4x + 3\}$$

$$\begin{bmatrix} 8 & 2 & 6 \\ 4 & 1 & 3 \end{bmatrix}$$

ANSWER: (x, y)  
(x, -4x + 3)  
(t, -4t + 3)

$$\begin{bmatrix} 1 & \frac{1}{4} & \frac{3}{4} \\ 0 & 0 & 0 \end{bmatrix}$$

$$\begin{aligned}
 x + \frac{1}{4}y &= \frac{3}{4} \\
 x &= -\frac{1}{4}y + \frac{3}{4}
 \end{aligned}$$

ANSWER (x, y)  
( $-\frac{1}{4}y + \frac{3}{4}$ , y)  
( $-\frac{1}{4}t + \frac{3}{4}$ , t)