

TRABASO AUTÓNOMO

- Write the systems of linear equations that is represented by the given augmented matrix.

$$\left[\begin{array}{cc|c} 2 & 5 & 7 \\ 1 & 4 & 9 \end{array} \right] \quad \begin{array}{l} 2x_1 + 5x_2 = 7 \\ x_1 + 4x_2 = 9 \end{array}$$

$$\left[\begin{array}{cc|c} 4 & 0 & -10 \\ 0 & 8 & 40 \end{array} \right] \quad \begin{array}{l} 4x_1 = -10 \\ 8x_2 = 40 \end{array}$$

- Perform the operations given this matrix: $\left[\begin{array}{cc|c} 1 & -3 & 2 \\ 4 & -6 & -8 \end{array} \right]$

$$R_1 \leftrightarrow R_2 \quad \begin{array}{cc|c} 4 & -6 & -8 \\ 1 & -3 & 2 \end{array}$$

$$-4R_1 \rightarrow R_1 \quad \begin{array}{cc|c} -16 & 24 & 32 \\ 1 & -3 & 2 \end{array}$$

$$2R_2 \rightarrow R_2 \quad \begin{array}{cc|c} 8 & -12 & -16 \\ 1 & -3 & 2 \end{array}$$

$$(-4)R_1 + R_2 \rightarrow R_2 \quad \begin{array}{cc|c} 0 & 6 & 0 \\ 1 & -3 & 2 \end{array}$$

$$(-2)R_1 + R_2 \rightarrow R_2 \quad \begin{array}{cc|c} 2 & 0 & -12 \\ 1 & -3 & 2 \end{array}$$

$$(1)R_1 + R_2 \rightarrow R_2 \quad \begin{array}{cc|c} 3 & -3 & -10 \\ 1 & -3 & 2 \end{array}$$

- Identify the operation: $\left[\begin{array}{cc|c} -1 & 2 & -3 \\ 6 & -3 & 12 \end{array} \right]$

$$\left[\begin{array}{cc|c} -1 & 2 & -3 \\ 2 & -1 & 4 \end{array} \right]$$

$$\left[\begin{array}{cc|c} -1 & 2 & -3 \\ 0 & 4 & -6 \end{array} \right]$$

$$\left[\begin{array}{cc|c} 1 & 1 & 1 \\ 6 & -3 & 12 \end{array} \right]$$

$$\left[\begin{array}{cc|c} 6 & -3 & 12 \\ -1 & 2 & -3 \end{array} \right]$$

$$\frac{1}{3}R_1 \rightarrow R_1$$

$$6R_2 \rightarrow R_2$$

$$\frac{1}{3}R_2 \rightarrow R_1$$

$$R_1 \leftrightarrow R_2$$

- Graph each solution set

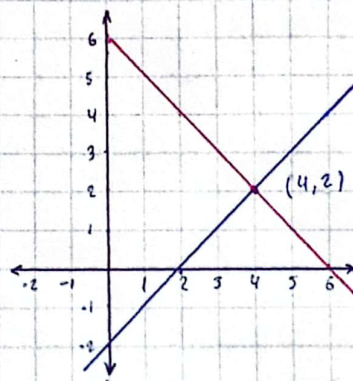
$$\begin{array}{l} 3x_1 - 2x_2 = 6 \\ 4x_1 - 3x_2 = 6 \end{array} \quad \left[\begin{array}{cc|c} 3 & -2 & 6 \\ 4 & -3 & 6 \end{array} \right]$$

$$\begin{array}{l} 3x_1 - 2x_2 = -3 \\ -6x_1 + 4x_2 = 6 \end{array} \quad \left[\begin{array}{cc|c} 3 & -2 & -3 \\ -6 & 4 & 6 \end{array} \right]$$

- Solve the system graphically:

$$x_1 + x_2 = 2 \rightarrow x_2 = 2 - x_1$$

$$x_1 + x_2 = 6 \rightarrow x_2 = 6 - x_1$$



- Write the solution for each system:

$$\left[\begin{array}{cc|c} 1 & 0 & -4 \\ 0 & 1 & 6 \end{array} \right] \quad \begin{array}{l} x_1 = -4 \\ x_2 = 6 \end{array}$$

$$\left[\begin{array}{cc|c} 1 & -2 & 15 \\ 0 & 0 & 0 \end{array} \right] \quad \text{No exists}$$

$$\left[\begin{array}{cc|c} 1 & -2 & 15 \\ 0 & 0 & 0 \end{array} \right] \quad \begin{array}{l} x_1 - 2x_2 = 15 \\ x_1 = 2n + 15 \end{array}$$

for any real number n

$$x_2 = n$$

• Write the solution for each system

$$\begin{cases} x_1 - 2x_2 = 1 & x_1 = 2x_2 + 1 & 2x_2 + 1 = \frac{x_2 + 5}{2} & 3x_2 = 3 \\ 2x_1 - x_2 = 5 & x_1 = \frac{x_2 + 5}{2} & 4x_2 + 2 = x_2 + 5 & x_2 = 1 ; x_1 = 3 \end{cases}$$

$$\begin{cases} x_1 - 4x_2 = -2 & x_1 = 4x_2 - 2 & 4x_2 - 2 = \frac{x_2 + 3}{2} & 7x_2 = 7 \\ -2x_1 + x_2 = -3 & x_1 = \frac{-x_2 - 3}{-2} & 8x_2 - 4 = x_2 + 3 & x_2 = 1 ; x_1 = 2 \end{cases}$$

$$\begin{cases} 3x_1 - x_2 = 2 & x_1 = \frac{x_2 + 2}{3} & \frac{x_2 + 2}{3} = 10 - 2x_2 & x_2 = 4 ; \\ x_1 + 2x_2 = 10 & x_1 = 10 - 2x_2 & x_2 + 2 = 30 - 6x_2 & x_1 = 2 \\ & & 7x_2 = 28 & \end{cases}$$

$$\begin{cases} x_1 + 2x_2 = 4 & x_1 = 4 - 2x_2 & 4 - 2x_2 = \frac{-4x_2 - 8}{2} & \\ 2x_1 + 4x_2 = -8 & x_1 = \frac{-4x_2 - 8}{2} & -8 - 4x_2 = -4x_2 - 8 & \rightarrow \text{No solution} \end{cases}$$

$$\begin{cases} 2x_1 + x_2 = 6 & x_1 = \frac{6 - x_2}{2} & \frac{6 - x_2}{2} = x_2 - 3 & 3x_2 = 12 \\ x_1 - x_2 = -3 & x_1 = x_2 - 3 & 6 - x_2 = 4x_2 - 6 & x_2 = 4 ; x_1 = 1 \end{cases}$$