

# Examen Corto #1 Álgebra Lineal

Miércoles, 5 de Agosto

Duración: (20 minutos)

Nombre: \_\_\_\_\_

Tema:	1	2	Total
Puntos:	50	50	100
Nota:			

Resuelva los siguientes sistemas de ecuaciones utilizando eliminación Gauss-Jordan, indique el vector solución resultante.

1. (50 pts.)

$$\begin{aligned} 3x + 6y - 5z &= 0 \\ x + y + 2z &= 9 \\ 2x + 4y - 3z &= 1 \end{aligned} \quad R_1 \leftrightarrow R_2$$

2. (50 pts.)

$$\begin{aligned} w + x + 2z &= 0 \\ x + y + 3z &= 6 \\ w + x + y + 2z &= 3 \end{aligned}$$

$$\begin{aligned} 1. \left[ \begin{array}{ccc|c} 1 & 1 & 2 & 9 \\ 3 & 6 & -5 & 0 \\ 2 & 4 & -3 & 1 \end{array} \right] & \xrightarrow{\substack{R_2 - 3R_1 \\ R_3 - 2R_1}} \left[ \begin{array}{ccc|c} 1 & 1 & 2 & 9 \\ 0 & 3 & -11 & -27 \\ 0 & 2 & -7 & -17 \end{array} \right] & \xrightarrow{3R_3 - 2R_2} \left[ \begin{array}{ccc|c} 1 & 1 & 2 & 9 \\ 0 & 3 & -11 & -27 \\ 0 & 0 & 1 & 3 \end{array} \right] & \xrightarrow{\substack{R_1 - 2R_3 \\ R_2 + 11R_3}} \left[ \begin{array}{ccc|c} 1 & 1 & 0 & 3 \\ 0 & 3 & 0 & 6 \\ 0 & 0 & 1 & 3 \end{array} \right] \\ & \xrightarrow{\substack{R_1 - R_2/3 \\ R_2/3}} \left[ \begin{array}{ccc|c} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 3 \end{array} \right] & \begin{aligned} x &= 1 \\ y &= 2 \\ z &= 3 \end{aligned} & \vec{x} = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} & + 5 \text{ pts.} \end{aligned}$$

$$\begin{aligned} 2. \left[ \begin{array}{cccc|c} 1 & 1 & 0 & 2 & 0 \\ 0 & 1 & 1 & 3 & 6 \\ 1 & 1 & 1 & 2 & 3 \end{array} \right] & \xrightarrow{\substack{R_3 - R_1 \\ R_2 - R_3}} \left[ \begin{array}{cccc|c} 1 & 1 & 0 & 2 & 0 \\ 0 & 1 & 1 & 3 & 6 \\ 0 & 0 & 1 & 0 & 3 \end{array} \right] & \xrightarrow{R_1 - R_2} \left[ \begin{array}{cccc|c} 1 & 0 & -1 & -1 & -3 \\ 0 & 1 & 1 & 3 & 6 \\ 0 & 0 & 1 & 0 & 3 \end{array} \right] \end{aligned}$$

$$\begin{aligned} \left[ \begin{array}{cccc|c} 1 & 0 & -1 & -1 & -3 \\ 0 & 1 & 1 & 3 & 6 \\ 0 & 0 & 1 & 0 & 3 \end{array} \right] & \begin{aligned} w &= -3 + t \\ x &= 3 - 3t \\ y &= 3 \\ z &= t \end{aligned} & \vec{s} = \begin{bmatrix} -3 \\ 3 \\ 3 \\ 0 \end{bmatrix} + t \begin{bmatrix} 1 \\ -3 \\ 0 \\ 1 \end{bmatrix} \end{aligned}$$

z libre + 5 pts.