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**Materia: Matemáticas administrativas**

**Grado: Segundo cuatrimestre**

**Grupo: A**

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## METODO DE SUSTITUCIÓN

### Ejercicio 1

$$x + 8y = 23$$

$$x + y = 9$$

$$\textcircled{1} \quad x + 8y = 23$$

$$x = 23 - 8y$$

$$\textcircled{2} \quad x + y = 9$$

$$23 - 8y + y = 9$$

$$23 - 8y + y = 9$$

$$8y - y = 9 - 23$$

$$7y = -14$$

$$y = \frac{-14}{7}$$

$$\boxed{y = -2}$$

sustituir y:

$$x + 8y = 23$$

$$x + 8(-2) = 23$$

$$x - 16 = 23$$

$$x = 23 + 16$$

$$x = 39$$

comprobación:

$$x + 8y = 23$$

$$39 + 8(-2) = 23$$

$$39 - 16 = 23$$

$$23 = 23$$

## METODO DE SUSTITUCION

### Ejercicio 2

$$3x - 4y = -6$$

$$x + 2y = 8$$

$$\textcircled{2} \quad x + 2y = 8$$

$$x = 8 - 2y$$

$$\textcircled{1} \quad 3(8 - 2y) - 4y = -6$$

$$16 - 6y - 4y = -6$$

$$6y - 4y = -6 - 16$$

$$2y = -22$$

$$y = \frac{-22}{2}$$

$$y = -11$$

sustituir y

$$x + 2y = 8$$

$$x + 2(-11) = 8$$

$$x - 22 = 8$$

$$x = 8 + 22$$

$$x = 30$$

comprobacion

$$x + 2y = 8$$

$$30 + 2(-11) = 8$$

$$30 - 22 = 8$$

$$8 = 8$$

## METODO DE IGUALACION

### Ejercicio 1

$$3x - 2y = 4$$

$$5x - 3y = 13$$

$$\textcircled{1} \quad 3x - 2y = 4$$

$$3x = 4 + 2y$$

$$x = \frac{4 + 2y}{3}$$

$$\textcircled{2} \quad 5x + 3y = 13$$

$$5x = 13 - 3y$$

$$x = \frac{13 - 3y}{5}$$

$$\begin{aligned} & \rightarrow x = 4 + 2(1) \\ & x = \frac{4 + 2}{3} = \frac{6}{3} = 3 \end{aligned}$$

$$\frac{4 + 2y}{3} = \frac{13 - 3y}{5} = 5(4 + 2y) = 3(13 - 3y)$$

$$= 20 + 10y = 39 - 9y$$

$$= 10y + 9y = 39 - 20$$

$$19y = 19$$

$$y = \frac{19}{19}$$

$$\underline{y = 1}$$

## METODO DE IGUALACION

### Ejercicio 2

$$\begin{aligned}4x + 3y &= -1 \\ 3x + 5y &= -9\end{aligned}$$

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

$$\begin{aligned}\textcircled{2} \quad 3x + 5y &= -9 \\ 3x &= -9 - 5y \\ x &= \frac{-9 - 5y}{3}\end{aligned}$$

$$\rightarrow x = \frac{-1 - 3(-3)}{4}$$

$$x = \frac{-1 + 9}{4} = \frac{8}{4} = \underline{2}$$

$$\frac{-1 - 3y}{4} = \frac{-9 - 5y}{3} = 3(1 - 3y) = 4(-9 - 5y)$$

$$= -3 - 9y = -36 - 20y$$

$$= -9y + 20y = 36 + 3$$

$$11y = -33$$

$$y = \frac{-33}{11}$$

$$y = -3$$