

EXTRACOLAR 4  
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EJERCICIOS (METODOS DE SUSTITUCION).

1.  $x + 8y = 23$   
 $x + y = 9$

$x + 8y = 23$   
 $x = 23 - 8y$   
 $x + y(23 - 8y) = 9$   
 $x - 23y - 8y = 9$   
 $x - 8y = 9 + 20$   
 $8x = 39$   
 $x = \frac{39}{8} = 4.875$

$x = 23 - 8y$   
 $x = 23 - 8(4.875)$   
 $x = 23 - 39$   
 $x = -16$

2.  $3x - 4y = -6$   
 $x + 2y = 8$

$3x - 4y = -6$   
 $4y = -6 - 3x$   
 $x + 2y(-6 - 3x) = 8$   
 $x + 12 - 6x = 8$   
 $x - 6x = 8 - 12$   
 $-6x = -4$   
 $x = \frac{-4}{-6} = 0.6666$

$4y = -6 - 3x$   
 $4x = -6 - 3(0.6666)$   
 $4x = -6 - 1.9998$   
 $4x = -7.9998$   
 $x = -1.9999$

EJERCICIOS (METODO DE IGUALACION)

3.  $3x - 2y = 4$   
 $5x + 3y = 13$

$3x - 2y = 4$  |  $5x + 3y = 13$   
 $3x = 4 + 2y$  |  $5x = 13 - 3y$   
 $x = \frac{4 + 2y}{3}$  |  $x = \frac{13 - 3y}{5}$

$\frac{4 + 2y}{3} = \frac{13 - 3y}{5} = 5(4 + 2y) = 3(13 - 3y)$   
 $= 20 + 10y = 39 - 9y$   
 $= 10y + 9y = 39 - 20$   
 $19y = 19$   
 $y = \frac{19}{19} = 1$

$\frac{x = 4 + 2y}{3} \quad (1)$   
 $\frac{x(4 + 2)}{3} = \frac{6}{3} = 2$

4.  $4x + 3y = -1$   
 $3x + 5y = -9$   
 $4x + 3y = -1$  |  $3x + 5y = -9$   
 $4x = -1 - 3y$  |  $3x = -9 - 5y$   
 $x = \frac{-1 - 3y}{4}$  |  $x = \frac{-9 - 5y}{3}$

$\frac{-1 - 3y}{4} = \frac{-9 - 5y}{3} = 3(-1 - 3y) = 4(-9 - 5y)$   
 $= 3 + 9y = 3 - 20y$   
 $= 9y + 20y = 3 - 3$   
 $29y = 0$   
 $29y = 0$

$\frac{x = -1 - 3y}{4} \quad (1)$   
 $\frac{x(1 - 3)}{4} = \frac{2}{4} = 0.5 \quad y = 0$