

Resuelve paso a paso cada una de las siguientes ecuaciones:

a) $5x + 11 = 15x - 19$

b) $7x - 9 = 3 + 9x - 10$

c) $6x - 4 + 3x - 9 + 3x = x - 6 - 3x + 1 + 7$

d) $x - 3(x - 2) = 6x - 2$

e) $2(3x + 2) = 4[2x - 5(x - 2)]$

f) $x - 3(x + 5) = 3x + 10$

g) $2(1 + x) - 3(x - 1) - 6 = x - 11$

h) $3x + \frac{1}{2}x + 6 = 2x$

i) $\frac{5x+7}{2} - \frac{3x+9}{4} = \frac{2x+5}{3} + 5$

j) $\frac{x}{2} + \frac{2x}{3} - \frac{5x}{6} = 5x - 14$

Soluciones:

$$a) 5x - 11 = 15x - 19 \rightarrow 5x - 15x = 11 - 19 \rightarrow -10x = -8 \rightarrow x = \frac{-8}{-10} = \frac{4}{5} \rightarrow x = \frac{4}{5}$$

$$b) 10x - 15 = 4x + 27 \rightarrow 10x - 4x = 27 + 15 \rightarrow 6x = 42 \rightarrow x = \frac{42}{6} = 7 \rightarrow x = 7$$

$$c) 6x - 9 + 3x - 2 - 5x = x - 6 - 3x + 1 \rightarrow 6x + 3x - 5x - x + 3x = 9 + 2 - 6 + 1 \rightarrow \\ \rightarrow 6x = 6 \rightarrow x = \frac{6}{6} = 1 \rightarrow x = 1$$

$$d) x - 3(x - 2) = 6x - 2 \rightarrow x - 3x + 6 = 6x - 2 \rightarrow x - 3x - 6x = -2 - 6 \rightarrow \\ \rightarrow -8x = -8 \rightarrow x = \frac{-8}{-8} = 1 \rightarrow x = 1$$

$$e) 3[10 - x] = 2(8 - x) + 13x \rightarrow 30 - 3x = 16 - 2x + 13x \rightarrow -3x + 2x - 13x = 16 - 30 \rightarrow \\ \rightarrow -14x = -14 \rightarrow x = \frac{-14}{-14} = 1 \rightarrow x = 1$$

$$f) 3[2x - (3x + 1)] = x + 1 \rightarrow 3(2x - 3x - 1) = x + 1 \rightarrow 3(-x - 1) = x + 1 \rightarrow \\ \rightarrow -3x - 3 = x + 1 \rightarrow -3x - x = 1 + 4 \rightarrow -4x = 4 \rightarrow x = \frac{4}{-4} = -1 \rightarrow x = -1$$

$$g) 2x + 3(x + 1) = 5 - 2(2x - 5) \rightarrow 2x + 3x + 3 = 5 - 4x + 10 \rightarrow 2x + 3x + 4x = 5 + 10 - 3 \rightarrow \\ \rightarrow 9x = 12 \rightarrow x = \frac{12}{9} = \frac{4}{3} \rightarrow x = \frac{4}{3}$$

$$h) \frac{3x}{2} + 2 = x + 4 \rightarrow \frac{3x}{2} + \frac{4}{2} = \frac{2x}{2} + \frac{8}{2} \rightarrow 3x + 4 = 2x + 8 \rightarrow 3x - 2x = 8 - 4 \rightarrow x = 4$$

$$i) \frac{x-4}{6} + \frac{2x-4}{8} = \frac{5x}{10} - \frac{5x-6}{12} \rightarrow \frac{x-4}{6} + \frac{x-2}{4} = \frac{x}{2} - \frac{5x-6}{12} \rightarrow \\ \rightarrow \frac{2(x-4)}{12} + \frac{3(x-2)}{12} = \frac{6x}{12} - \frac{5x-6}{12} \rightarrow 2(x-4) + 3(x-2) = 6x - 5x + 6 \rightarrow \\ \rightarrow 2x - 8 + 3x - 6 = 6x - 5x + 6 \rightarrow 2x + 3x - 6x + 5x = 6 + 6 + 8 \rightarrow 5x = 20 \rightarrow \\ \rightarrow x = \frac{20}{5} = 4 \rightarrow x = 4$$

$$j) \frac{5x}{8} - 5(x - 20) = \frac{18 - 2x}{6} \rightarrow \frac{15x}{24} - \frac{24 \cdot 5(x - 20)}{24} = \frac{4(18 - 2x)}{24} \\ \rightarrow 15x - 120(x - 20) = 72 - 8x \rightarrow 15x - 120x + 2400 = 72 - 8x \\ \rightarrow 15x - 120x + 8x = 72 - 2400 \rightarrow -97x = -2328 \rightarrow x = \frac{-2328}{-97} = 24 \rightarrow x = 24$$