

Ecuaciones de primer grado con denominador.

$$a) \frac{x}{3} + \frac{x}{6} - \frac{x}{9} = 7$$

$$d) \frac{5x-1}{4} - \frac{3x+8}{6} = \frac{17}{12}$$

$$b) \frac{x-3}{2} + \frac{2x-5}{2} = 5$$

$$e) \frac{x+1}{4} - \frac{x-2}{6} + \frac{3x-3}{5} = \frac{34}{10}$$

$$c) \frac{7x-1}{2} - \frac{4x-6}{2} = 7$$

$$f) \frac{x-2}{3} - \frac{5x-4}{6} = \frac{-45x}{90}$$

$$a) \frac{x}{3} + \frac{x}{6} - \frac{x}{9} = 7 \Rightarrow \frac{6x}{18} + \frac{3x}{18} - \frac{2x}{18} = \frac{126}{18} \Rightarrow 7x = 126 \Rightarrow x = \frac{126}{7} = 18$$

$$b) \frac{x-3}{2} + \frac{2x-5}{2} = 5 \Rightarrow x-3+2x-5 = 10 \Rightarrow 3x = 18 \Rightarrow x = 6$$

$$c) \frac{7x-1}{2} - \frac{4x-6}{2} = 7 \Rightarrow 7x-1-(4x-6) = 14 \Rightarrow 3x = 9 \Rightarrow x = 3$$

$$d) \frac{5x-1}{4} - \frac{3x+8}{6} = \frac{17}{12} \Rightarrow \frac{15x-3}{12} - \frac{6x+16}{12} = \frac{17}{12} \Rightarrow 15x-3-(6x+16) = 17 \Rightarrow 9x = 36 \Rightarrow x = 4$$

$$e) \frac{x+1}{4} - \frac{x-2}{6} + \frac{3x-3}{5} = \frac{34}{10} \Rightarrow \frac{15x+15}{60} - \frac{10x-20}{60} + \frac{36x-36}{60} = \frac{204}{60} \Rightarrow$$

$$\Rightarrow 15x+15-(10x-20)+36x-36 = 204 \Rightarrow 41x = 205 \Rightarrow x = 5$$

$$f) \frac{x-2}{3} - \frac{5x-4}{6} = \frac{-45x}{90} \Rightarrow \frac{30x-60}{90} - \frac{75x-60}{90} = \frac{-45x}{90} \Rightarrow 30x-60-(75x-60) = -45x \Rightarrow x = 0$$

Ecuaciones de primer grado con denominador.

$$a) 3x - \frac{1}{4} = 2x + \frac{1}{3} - \frac{5}{6}$$

$$d) \frac{5x+7}{4} - \frac{2x+1}{3} = 2$$

$$f) x - 2 - \frac{5x+7}{6} = \frac{10-4x}{9}$$

$$b) \frac{2x-3}{5} + 1 = 4x + 4$$

$$e) \frac{6-x}{5} + \frac{3x-1}{6} - \frac{2x+3}{4} = \frac{1}{12}$$

$$g) \frac{9x-1}{12} + \frac{6x+6}{8} - \frac{3x}{10} = \frac{16}{15}$$

$$c) \frac{3x-1}{2} + \frac{5x+7}{2} = -1$$

$$a) 3x - 2x = \frac{1}{3} - \frac{5}{6} + \frac{1}{4} \rightarrow x = \frac{1}{3} - \frac{5}{6} + \frac{1}{4} = \frac{4-10+3}{12} = \frac{-3}{12} = \frac{-1}{4}$$

$$b) \frac{2x-3}{5} + 1 = 4x + 4 \rightarrow \frac{2x-3}{5} = 4x + 3 \rightarrow 2x-3 = 20x+15 \rightarrow x = -1$$

$$c) \frac{3x-1}{2} + \frac{5x+7}{2} = -1 \rightarrow 3x-1+5x+7 = -2 \rightarrow 8x = -8 \rightarrow x = -1$$

$$d) \frac{5x+7}{4} - \frac{2x+1}{3} = 2 \rightarrow \frac{15x+21}{12} - \frac{8x+4}{12} = \frac{24}{12} \rightarrow 15x+21-(8x+4) = 24 \rightarrow 7x = 7 \rightarrow x = 1$$

$$e) \left(\frac{6-x}{5} + \frac{3x-1}{6} - \frac{2x+3}{4} \right) 60 = \frac{1}{12} 60 \rightarrow 72 - 12x + 30x - 10 - 30x - 45 = 5 \rightarrow x = \frac{-12}{-12} = 1$$

$$f) x - 2 - \frac{5x+7}{6} = \frac{10-4x}{9} \rightarrow \frac{18x-36}{18} - \frac{15x+21}{18} = \frac{20-8x}{18} \rightarrow 18x-15x+8x = 20+36+21 \rightarrow x = \frac{77}{11} = 7$$

$$g) \frac{9x-1}{12} + \frac{6x+6}{8} - \frac{3x}{10} = \frac{16}{15} \rightarrow \frac{90x-10+90x+90-36x}{120} = \frac{128}{120} \rightarrow 144x = 48 \rightarrow x = \frac{48}{144} = \frac{1}{3}$$

Ecuaciones de primer grado con paréntesis y/o denominador.

a) $\frac{2(3x+7)}{5} + \frac{5(x-3)}{2} = -1$ b) $\frac{3(4x+1)}{7} - \frac{6(x-3)}{5} = 3$ c) $3(2x-4) + \frac{5x+1}{6} = \frac{1}{4}$

a) $\frac{2(3x+7)}{5} + \frac{5(x-3)}{2} = -1 \Rightarrow \frac{6x+14}{5} + \frac{5x-15}{2} = -1 \Rightarrow \frac{12x+28}{10} + \frac{25x-75}{10} = \frac{-10}{10} \Rightarrow 37x = 37 \Rightarrow x = 1$

b) $\frac{3(4x+1)}{7} - \frac{6(x-3)}{5} = 3 \Rightarrow \frac{12x+3}{7} - \frac{6x-18}{5} = 3 \Rightarrow 5(12x+3) - 7(6x-18) = 3 \cdot 5 \cdot 7 \Rightarrow 18x = -36 \Rightarrow x = -2$

c) $3(2x-4) + \frac{5x+1}{6} = \frac{1}{4} \Rightarrow 6x-12 + \frac{5x+1}{6} = \frac{1}{4} \Rightarrow \frac{72x-144}{12} + \frac{10x+2}{12} = \frac{3}{12} \Rightarrow 82x = 145 \Rightarrow x = \frac{145}{82}$