

# ECUACIONES CON FRACCIONES

Estas son las soluciones. A continuación tienes también las ecuaciones resueltas, con las comprobaciones de todas ellas:

## FÁCILES

a)  $x = -1$

b)  $x = 6$

c)  $x = -\frac{1}{3}$

d)  $x = 5$

## INTERMEDIAS

a)  $x = -\frac{1}{2}$

b)  $x = \frac{9}{4}$

c)  $x = 5$

d)  $x = 3$

## CON SIGNO - DELANTE DE LAS FRACCIONES (OJO)

a)  $x = 1$

b)  $x = -\frac{3}{4}$

# ECUACIONES CON FRACCIONES

## FÁCILES

$$2) \frac{x}{3} = \frac{1}{15} + \frac{2x}{5}$$

$$\frac{5x}{15} = \frac{1}{15} + \frac{6x}{15}$$

$$5x = 1 + 6x$$

$$5x - 6x = 1$$

$$-x = 1$$

$$\boxed{x = \frac{1}{-1} = -1}$$

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

$$\frac{3x}{6} + \frac{2x}{6} = \frac{6x}{6} - \frac{6}{6}$$

$$3x + 2x = 6x - 6$$

$$3x + 2x - 6x = -6$$

$$-x = -6$$

$$\boxed{x = 6}$$

Cambio  
signo en  
ambos  
miembros  
(es como

dividir por -1)

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

$$\frac{15x}{10} - \frac{2}{10} = \frac{6x}{10} - \frac{5}{10}$$

$$15x - 2 = 6x - 5$$

$$15x - 6x = -5 + 2$$

$$9x = -3$$

$$\boxed{x = \frac{-3}{9} = -\frac{1}{3}}$$

Camp

$$I) -\frac{1}{3}$$

$$II) \frac{1}{15} + \frac{2 \cdot (-1)}{5} = \frac{1}{15} - \frac{2}{5} = \\ = \frac{1}{15} - \frac{6}{15} = \frac{-5}{15} = -\frac{1}{3}$$

(B)

Camp.

$$I) \frac{6}{2} + \frac{6}{3} = 3 + 2 = 5 \leftarrow (B)$$

$$II) 6 - 1 = 5 \leftarrow$$

Camp.

$$I) \frac{3 \cdot (-\frac{1}{3})}{2} - \frac{1}{5} = -\frac{1}{2} - \frac{1}{5} = \\ = -\frac{5}{10} - \frac{2}{10} = -\frac{7}{10} \leftarrow$$

$$II) \frac{3 \cdot (-\frac{1}{3})}{5} - \frac{1}{2} = -\frac{1}{5} - \frac{1}{2} = \\ = -\frac{2}{10} - \frac{5}{10} = -\frac{7}{10} \leftarrow (B)$$

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

$$\text{mcm}(2, 6, 3, 5) = 30$$

$$\frac{15x}{30} - \frac{25}{30} = \frac{10x}{30} - \frac{6x}{30} + \frac{30}{30}$$

$$15x - 25 = 10x - 6x + 30$$

$$15x - 10x + 6x = 30 + 25$$

$$11x = 55$$

$$\boxed{x = \frac{55}{11} = 5}$$

Camp

$$I) \frac{5}{2} - \frac{5}{6} = \frac{15}{6} - \frac{5}{6} = \frac{10}{6} = \frac{5}{3}$$

$$II) \frac{5}{3} - \frac{5}{5} + 1 = \frac{5}{3} - 1 + 1 = \frac{5}{3}$$

← (B)

INTERMEDIAS

$$a) \frac{x+3}{7} + \frac{x-1}{14} = \frac{x+1}{2}$$

$$\frac{2 \cdot (x+3)}{14} + \frac{x-1}{14} = \frac{7 \cdot (x+1)}{14}$$

$$2 \cdot (x+3) + x-1 = 7 \cdot (x+1)$$

$$2x+6+x-1 = 7x+7$$

$$2x+x-7x = 7-6+1$$

$$-4x = 2$$

$$\boxed{x = \frac{2}{-4} = -\frac{1}{2}}$$

Camp

$$I) \frac{-\frac{1}{2}+3}{7} + \frac{-\frac{1}{2}-1}{14} = \frac{\frac{5}{2}}{7} - \frac{\frac{3}{2}}{14}$$

$$= \frac{5}{2} : 7 - \frac{3}{2} : 14 = \frac{5}{14} - \frac{3}{28}$$

$$= \frac{10}{28} - \frac{3}{28} = \frac{7}{28} = \frac{1}{4} \leftarrow$$

$$II) \frac{-\frac{1}{2}+1}{2} = \frac{-\frac{1}{2}+\frac{2}{2}}{2} = \frac{\frac{1}{2}}{2} =$$

$$= \frac{1}{2} : 2 = \frac{1}{4} \leftarrow$$

(B)

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

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

$$2x - 2 - 6 = x + 1 - 3x$$

$$2x - x + 3x = 1 + 2 + 6$$

$$4x = 9$$

$$x = \frac{9}{4}$$

Camp

$$I) \frac{\frac{9}{4} - 1}{3} - 1 = \frac{\frac{9}{4} - \frac{4}{4}}{3} - 1 = \frac{\frac{5}{4}}{3} - 1 = \frac{5}{12} - 1 =$$

$$= \frac{5}{12} - \frac{12}{12} = \frac{-7}{12}$$

$$II) \frac{\frac{9}{4} + 1}{6} - \frac{\frac{9}{4}}{2} = \frac{\frac{13}{4}}{6} - \frac{\frac{9}{4}}{2} = \frac{13}{24} - \frac{9}{8} =$$

$$= \frac{13}{24} - \frac{27}{24} = \frac{-14}{24} = \frac{-7}{12}$$

(B)

$$c) \frac{x-1}{2} = \frac{3x-10}{5} + \frac{x-2}{3}$$

$$\frac{15(x-1)}{30} = \frac{6(3x-10)}{30} + \frac{10(x-2)}{30}$$

$$15x - 15 = 18x - 60 + 10x - 20$$

$$15x - 18x - 10x = -60 - 20 + 15$$

$$-13x = -65$$

$$\boxed{x = \frac{-65}{-13} = 5}$$

Camp

$$I) \frac{5-1}{2} = \frac{4}{2} = 2$$

$$II) \frac{3 \cdot 5 - 10}{5} + \frac{5-2}{3} =$$

$$= \frac{5}{5} + \frac{3}{3} = 1 + 1 =$$

$$= 2$$

(B)

$$d) \frac{x+1}{6} + \frac{x-4}{3} = \frac{1}{3}$$

$$\frac{x+1}{6} + \frac{2 \cdot (x-4)}{6} = \frac{2}{6}$$

$$x+1+2 \cdot (x-4) = 2$$

$$x+1+2x-8 = 2$$

$$x+2x = 2-1+8$$

$$3x = 9$$

$$\boxed{x = \frac{9}{3} = 3}$$

CON SIGNO -

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

$$\frac{15x}{6} - \frac{2x+3}{6} = \frac{10}{6}$$

CUIDADO

$$15x - (2x+3) = 10$$

$$15x - 2x - 3 = 10$$

$$15x - 2x = 10 + 3$$

$$13x = 13$$

$$\boxed{x = \frac{13}{13} = 1}$$

$$b) \frac{2x}{3} - \frac{5x-7}{6} = \frac{x}{2} + \frac{5}{3}$$

$$\frac{4x}{6} - \frac{5x-7}{6} = \frac{3x}{6} + \frac{10}{6}$$

$$4x - (5x-7) = 3x + 10$$

$$4x - 5x + 7 = 3x + 10$$

$$4x - 5x - 3x = 10 - 7$$

$$-4x = 3$$

$$\boxed{x = -\frac{3}{4}}$$

Comp

$$I) \frac{3+1}{6} + \frac{3-4}{3} = \frac{4}{6} + \frac{(-1)}{3} =$$

$$= \frac{2}{3} - \frac{1}{3} = \frac{1}{3} \leftarrow \textcircled{B}$$

$$II) \frac{1}{3} \leftarrow$$

Comp

$$I) \frac{5 \cdot 1}{2} - \frac{2 \cdot 1 + 3}{6} = \frac{5}{2} - \frac{5}{6} =$$

$$= \frac{15}{6} - \frac{5}{6} = \frac{10}{6} = \frac{5}{3}$$

$$II) \frac{5}{3} \leftarrow \textcircled{B}$$

Comp

$$I) \frac{2 \cdot (-\frac{3}{4})}{3} - \frac{5 \cdot (-\frac{3}{4}) - 7}{6} =$$

$$= \frac{-\frac{3}{2}}{3} - \frac{-\frac{15}{4} - 7}{6} = \frac{-\frac{3}{2}}{3} - \frac{-\frac{43}{4}}{6} =$$

$$= -\frac{3}{2} : 3 - \left(\frac{-43}{4}\right) : 6 = \frac{-3}{6} + \frac{43}{24} =$$

$$= \frac{-12}{24} + \frac{43}{24} = \frac{31}{24}$$

$$II) \frac{-\frac{3}{4}}{2} + \frac{5}{3} = \frac{-3}{4} : 2 + \frac{5}{3} = \frac{-3}{8} + \frac{5}{3} =$$

$$= \frac{-9}{24} + \frac{40}{24} = \frac{31}{24} \textcircled{B}$$