

FICHA 4: Operaciones combinadas con fracciones (I)

Efectuar las siguientes **operaciones combinadas**, simplificando siempre en todos los pasos, y respetando la jerarquía. En el caso de las potencias y raíces, operar previamente:

1) $\frac{1}{2} \cdot \left(\frac{3}{2} + \frac{2}{3}\right) =$ (Sol: 13/12)

2) $\frac{1}{2} \cdot \frac{3}{2} + \frac{2}{3} =$ (Sol: 17/12)

3) $\frac{1}{2} + \frac{3}{2} \cdot \frac{14}{5} =$ (Sol: 47/10)

4) $\frac{2}{5} \cdot \frac{1}{2} + \frac{4}{3} - \frac{1}{6} =$ (Sol: 41/30)

5) $\frac{2}{5} + \frac{1}{2} \cdot \frac{4}{3} - \frac{1}{6} =$ (Sol: 9/10)

6) $\frac{2}{5} : \frac{1}{2} - \frac{4}{3} : \frac{1}{6} =$ (Sol: -36/5)

7) $\frac{5}{8} - \frac{1}{6} \cdot \left(\frac{1}{2} - \frac{2}{3}\right) =$ (Sol: 47/72)

8) $\frac{5}{8} - \frac{1}{6} \cdot \frac{1}{2} + \frac{2}{3} =$ (Sol: 29/24)

9) $\frac{17}{15} \cdot \frac{1}{5} + \frac{4}{3} =$ (Sol: 39/25)

10) $\frac{5}{2} - 1 : \frac{1}{3} \cdot \frac{4}{5} =$ (Sol: 1/10)

11) $\frac{2}{3} - \left(2 : \frac{4}{5} + \frac{1}{2}\right) =$ (Sol: -7/3)

12) $1 - \frac{3}{4} : \frac{2}{9} - \frac{1}{3} + \sqrt{\frac{4}{9}} =$ (Sol: -49/24)

$$13) 4 \cdot \left(\frac{7}{4}\right)^3 + 3 : \left(\frac{4}{7}\right)^2 - \frac{45}{4} \cdot \frac{7}{4} + \frac{17}{16} =$$

(Sol: 12)

$$14) 1 - \left[\frac{3}{4} : \left(\frac{2}{9} - \frac{1}{3} \right) + \frac{2}{3} \right] =$$

(Sol: 85/12)

$$15) \frac{1}{2} - \frac{5}{2} \cdot \left(\frac{1}{3} - \frac{4}{5} \right) =$$

(Sol: 5/3)

$$16) \left(\frac{1}{2} - \sqrt{\frac{25}{4}} \right) \cdot \frac{1}{3} - \sqrt{\frac{16}{25}} =$$

(Sol: -22/15)

$$17) \left(\frac{1}{2} - \frac{5}{2} \right) \cdot \left(\frac{1}{3} - \frac{4}{5} \right) =$$

(Sol: 14/15)

$$18) \sqrt{\frac{37}{36} - 1} : \left[\left(\frac{1}{2} \right)^2 - \frac{4}{3} \right] =$$

(Sol: -2/13)

$$19) \frac{2}{3} - \left[\frac{3}{2} + 1 : \left(\frac{1}{2} \right)^2 \right] - \frac{4}{3} =$$

(Sol: -37/6)

$$20) \frac{2}{3} - \left[\frac{3}{2} + 1 : \left(\frac{1}{4} - \frac{4}{3} \right) \right] =$$

(Sol: 7/78)

$$21) \frac{1}{5} \cdot \left(\frac{2}{7} - \sqrt{\frac{1}{9}} \right) - \frac{3}{2} =$$

(Sol: -317/210)

$$22) \frac{3}{2} \cdot \left(\frac{1}{3} + \frac{6}{5} \right) - \left(\frac{3}{2} + 3 \right) =$$

(Sol: -11/5)

$$23) \frac{1}{2} \cdot \frac{8}{3} - \frac{5}{3} : \sqrt{\frac{56}{25}} + 1 + 1 =$$

(Sol: 38/27)

$$24) \left(\sqrt{\frac{4}{25}} - 3 + \frac{1}{3} \right) : \frac{2}{3} - \frac{1}{3} \cdot \frac{6}{5} =$$

(Sol: -19/5)

$$25) -4 : \left(\frac{4}{5} \right)^3 + 3 \cdot \left(\frac{5}{4} \right)^2 + \frac{45}{4} \cdot \frac{5}{4} + \frac{17}{16} =$$

(Sol: 12)

26) $8 \cdot \frac{65}{23} - 7 \cdot \frac{25}{23} =$

(Sol: 15)

27) $\frac{2}{3} : \left[\frac{1}{3} \cdot \left(1 - \frac{5}{3} + \frac{1}{2} \right) + 5 \right] =$

(Sol: 12/89)

28) $4 - \frac{3}{8} \cdot \frac{6}{5} + \frac{4}{3} - \frac{2}{3} : 4 =$

(Sol: 283/60)

29) $4 - \frac{3}{8} \cdot \left(\frac{6}{5} + \frac{4}{3} - \frac{2}{3} : 4 \right) =$

(Sol: 249/80)

30) $1 : \left[\left(\frac{2}{7} - \frac{1}{3} \right) \cdot \sqrt{\frac{9}{4}} \right] =$

(Sol: -14)

31) $\frac{1}{35} : \frac{1}{35} - \frac{1}{7} : \frac{1}{35} =$

(Sol: -4)

32) $\left[5 + \frac{5}{6} : \left(\frac{7}{5} - \frac{2}{5} \cdot \frac{15}{4} \right) \right] \cdot \left(-\frac{2}{5} \right) =$

(Sol: 4/3)

33) $\frac{1}{35} : \left(\frac{3}{7} - \frac{2}{5} \right) - \frac{4}{13} \cdot \left\{ \frac{1}{3} - \left[\left(\frac{1}{2} \right)^2 - 1 \right] \right\} =$

(Sol: 2/3)

34) $\frac{2}{3} - \frac{3}{2} \cdot \left(\frac{2}{3} \right)^2 : \left(1 + \frac{3}{5} \cdot \frac{1}{6} \right) - 1$

(Sol: -31/33)

35) $6 : \frac{23}{65} - 11 \cdot \frac{25}{23} =$

(Sol: 5)

36) $\left(\frac{1}{2} + \frac{1}{3} \right) - \left[\frac{5}{2} - \left(2 + \frac{1}{3} \right) \cdot \left(1 - \frac{1}{7} \right) \right] \cdot \left(1 - \frac{1}{3} \right) =$

(Sol: 1/2)

FICHA 5: Operaciones combinadas con fracciones (II)

Efectuar las siguientes **operaciones combinadas**, simplificando siempre en todos los pasos, y respetando la jerarquía. En el caso de las potencias y raíces, operar previamente:

1) $\frac{5}{4} - \frac{2}{4} =$ (Soluc: 3/4)

2) $\frac{5}{5} - \frac{4}{4} =$ (Soluc: 0)

3) $\frac{5}{5} - \frac{16}{4} =$ (Soluc: -3)

4) $-\frac{2}{3} - 4 =$ (Soluc: -14/3)

5) $\left(32 + \frac{1}{2} - 4\right) - \left(16 - \frac{3}{2} - 2\right) =$ (Soluc: 16)

6) $\left(\frac{1}{2}\right)^2 + \frac{1}{3} \cdot \frac{6}{5} =$ (Soluc: 13/20)

7) $\sqrt{\frac{25}{144} + \frac{1}{6}} \cdot \frac{6}{5} =$ (Soluc: 7/10)

8) $1 - \frac{2}{3} \cdot \frac{1}{5} =$ (Soluc: 13/15)

9) $\left(1 - \frac{2}{3}\right) \cdot \frac{1}{5} =$ (Soluc: 1/15)

10) $-\frac{2}{3} + \frac{4}{3} \cdot \frac{1}{2} =$ (Soluc: 0)

11) $-2 - \sqrt{\frac{1}{9}} =$ (Soluc: -7/3)

12) $\left(-1 + \frac{1}{2} - \frac{1}{3}\right) \cdot \frac{6}{5} =$ (Soluc: -1)

13) $-\frac{2}{5} + \frac{1}{3} \cdot \frac{4}{5} - \frac{1}{3} \cdot \frac{6}{5} =$ (Soluc: -8/15)

14) $\left(1 - \frac{1}{2} + \frac{1}{3}\right) \cdot \sqrt{\frac{4}{25}} =$ (Soluc: 1/3)

15) $1 - \frac{1}{2} + \frac{1}{3} \cdot \frac{2}{5} =$ (Soluc: 19/30)

16) $\left(-\frac{2}{5} + \frac{1}{3}\right) \cdot \frac{4}{5} - \frac{1}{3} \cdot \frac{6}{5} =$ (Soluc: -34/75)

17) $\frac{1}{2} + \frac{1}{3} \cdot \sqrt{\frac{16}{9}} - \frac{1}{12} + \sqrt{\frac{25}{16}} \cdot \frac{8}{3} =$ (Soluc: 151/36)

18) $\left(\frac{1}{2} + \frac{1}{3}\right) \cdot \frac{4}{3} - \frac{1}{12} + \frac{5}{4} \cdot \frac{8}{3} =$ (Soluc: 157/36)

19) $-\frac{1}{2} \cdot \frac{4}{7} - \sqrt{\frac{4}{196}} + \frac{1}{2} \cdot \frac{5}{7} =$ (Soluc: -1/14)

20) $-\frac{1}{2} \cdot \left(\frac{4}{7} - \frac{2}{14}\right) + \frac{1}{2} \cdot \frac{5}{7} =$ (Soluc: 1/7)

21) $\frac{21}{2} - \frac{19}{2} : \left(\frac{1}{5} + \frac{2}{5} \cdot \frac{15}{8}\right) - \frac{9}{2} : \frac{3}{4} =$ (Soluc: -11/2)

22) $\frac{17}{9} - \frac{15}{5} + \frac{4}{3} : \left(\frac{1}{5} + \frac{2}{3} - \frac{1}{15}\right) + \frac{14}{3} : \frac{16}{8} =$ (Soluc: 26/9)

23) $\frac{1}{3} + \frac{4}{3} : \frac{5}{6} \cdot \left(\frac{1}{2} - \frac{3}{2} \cdot \frac{10}{9} + 4\right) =$ (Soluc: 73/15)

24) $\frac{21}{2} - \frac{19}{2} : \left(\frac{1}{5} + \frac{2}{5} \cdot \sqrt{\frac{225}{64}}\right) =$ (Soluc: 1/2)

25) $5 \cdot \left(2 \cdot \frac{51}{22} - 3\right) - 8 \cdot \left(4 \cdot \frac{51}{22} - 9\right) =$ (Soluc: 6)

FICHA 6: Operaciones combinadas con fracciones (III)

Efectuar las siguientes **operaciones combinadas**, simplificando siempre en todos los pasos, y respetando la jerarquía:

1) $\frac{2}{3} + \left[1 - \left(\frac{3}{4} - \frac{1}{6} \right) \right] =$ (Soluc: 13/12)

2) $\frac{4}{5} - \frac{7}{3} \cdot \frac{3}{7} + \frac{1}{5} \left(2 + \frac{1}{2} \right) - \frac{7}{3} + 4 : \frac{6}{5} =$ (Soluc: 13/10)

3) $\frac{2}{3} + \frac{5}{4} \left(\frac{3}{5} + \frac{4}{10} \right) - \frac{5}{4} + \left(\frac{3}{5} : 4 \right) + \frac{12}{5} =$ (Soluc: 193/60)

4) $2 + \frac{1}{5} : \left(2 + \frac{7}{3} - \frac{2}{4} + \sqrt{\frac{25}{9}} \right) =$ (Soluc: 112/55)

5) $\left(\frac{2}{7} - \frac{4}{5} + \frac{2}{8} \right) \cdot \frac{3}{2} - \frac{7}{5} : \frac{4}{7} =$ (Soluc: -797/280)

6) $\frac{17}{9} - \frac{15}{5} + \frac{4}{3} : \left(\frac{1}{5} + \frac{2}{3} - \frac{1}{15} \right) + \frac{14}{3} : \frac{16}{8} =$ (Soluc: 26/9)

7) $\frac{21}{5} + \frac{15}{4} \cdot \frac{16}{3} - \frac{15}{30} + \frac{12}{4} : \frac{5}{4} + 3 =$ (Soluc: 291/10)

8) $\frac{2}{3} - \left[\frac{3}{2} - \frac{1}{5} - \left(\frac{2}{5} - \frac{1}{3} \right) + \left(\frac{6}{5} - \frac{1}{2} \right) \right] - \frac{3}{4} + \left(\frac{1}{2} - \frac{1}{3} \right) =$ (Soluc: -37/20)

9) $2 - \left[\sqrt{\frac{16}{9}} - \left(\frac{1}{2} + \frac{2}{5} \right) - \frac{1}{3} \right] - \left(\frac{4}{3} + 2 \right) - \frac{1}{5} =$ (Soluc: -49/30)

10) $2 + \left(\frac{5}{2} - 3 \right) - \left\{ \frac{7}{10} - \left[\frac{2}{5} + \left(\frac{1}{2} \right)^2 \right] \right\} =$ (Soluc: 29/20)

11) $-\frac{3}{8} + \left(4 - \sqrt{\frac{1}{4}} \right) - \left[\left(2 - \frac{5}{4} \right) + \left(\frac{7}{2} - \frac{1}{8} \right) \right] =$ (Soluc: -1)

12) $\left(\frac{4}{3} - \frac{-1}{9} \right) + \left[2 - \left(-\frac{5}{4} + \frac{2}{3} \right) \right] - \frac{7}{2} =$ (Soluc: 19/36)

13) $\left[\left(\frac{4}{6} + \frac{17}{2} \right) : \left(\frac{4}{3} - \frac{5}{12} \right) \right] \cdot \left(\frac{1}{6} + \frac{1}{15} \right) =$ (Soluc: 31/165)

14) $\left(\frac{1}{3} - \frac{4}{5} \right) \cdot \left[\left(\frac{1}{3} - 1 \right) \cdot 3 - \frac{1+2\sqrt{5}}{3} \right] =$ (Soluc: 259/225)

15) $\frac{4}{5} : \left[\frac{12}{16} \left(\frac{1}{6} + \frac{2}{3} \right) - \frac{3}{8} \right] - 3 \left[\frac{1}{6} : \left(1 - \frac{2}{5} \right) \right] =$ (Soluc: 71/30)

$$16) \sqrt{\frac{9}{4} - \frac{1}{2} \cdot \frac{4}{3}} : \left(\sqrt{\frac{16}{9} - \frac{2}{3} \cdot \frac{15}{8} + 1} \right) =$$

(Soluc: 23/26)

$$17) 4 \cdot \left(\frac{7}{4}\right)^3 + 3 \cdot \left(\frac{7}{4}\right)^2 - \frac{45}{4} \cdot \frac{7}{4} + \frac{17}{16} =$$

(Soluc: 12)

$$18) 4 \cdot \left(-\frac{5}{4}\right)^3 + 3 \cdot \left(-\frac{5}{4}\right)^2 - \frac{45}{4} \cdot \left(-\frac{5}{4}\right) + \frac{17}{16} =$$

(Soluc: 12)

$$19) \frac{\left[(-2)^4\right]^6 : (2^2 \cdot 8)^4}{\left(\frac{4}{3}\right)^8 : \left(\frac{4}{3}\right)^6 \cdot (-1)^8} =$$

(Soluc: 3²)