

Chapitre 3, Livre 4^{ème}
Diverses fractions – Résolutions S5

Exercices simples :

$$A = \frac{3}{\frac{3}{2}} = 3 \times \frac{2}{3} = 2 \quad B = \frac{\frac{2}{3}}{\frac{4}{5}} = \frac{2}{3} \times \frac{5}{4} = \frac{2 \times 5}{3 \times 2 \cdot 2} = \frac{5}{6} \quad C = 1 + \frac{6}{\frac{5}{4}} = 1 + 6 \times \frac{4}{5} = 1 + \frac{2 \cdot 3 \times 5}{2 \cdot 2} = 1 + \frac{15}{2} = \frac{2+15}{2} = \frac{17}{2}$$

$$D = \frac{1 + \frac{3}{4}}{3 - \frac{2}{5}} = \frac{\frac{4+3}{4}}{\frac{15-2}{5}} = \frac{\frac{7}{4}}{\frac{13}{5}} = \frac{7}{4} \times \frac{5}{13} = \frac{35}{52} \quad E = \frac{\frac{1}{2} + \frac{2}{3}}{\frac{3}{4}} = \frac{\frac{3+4}{6}}{\frac{8+9}{12}} = \frac{\frac{7}{6}}{\frac{17}{12}} = \frac{7}{6} \times \frac{12}{17} = \frac{7 \times 6 \cdot 2}{6 \times 17} = \frac{14}{17}$$

Divers :

$$A = \frac{3 - \frac{1}{3}}{5 - \frac{1}{3}} = \frac{\frac{9-1}{3}}{\frac{15-1}{3}} = \frac{\frac{8}{3}}{\frac{14}{3}} = \frac{8}{3} \times \frac{3}{14} = \frac{2 \cdot 4 \times 3}{3 \times 2 \cdot 7} = \frac{4}{7}$$

$$B = \frac{3 - \frac{7}{2}}{5 - \frac{7}{2}} = \frac{\frac{6-7}{2}}{\frac{10-7}{2}} = \frac{\frac{-1}{2}}{\frac{3}{2}} = -\frac{1}{2} \times \frac{2}{3} = -\frac{1}{3}$$

$$C = \frac{3 - \frac{2}{3}}{\frac{4}{3} \times 7} = \frac{\frac{9-2}{3}}{\frac{4 \times 7}{3}} = \frac{\frac{7}{3}}{\frac{28}{3}} = \frac{7}{3} \times \frac{3}{28} = \frac{1}{4}$$

$$D = \frac{\frac{2}{3}}{\frac{5}{6}} - \frac{2}{5} = \frac{2 \times 6}{3 \times 5} - \frac{2}{5} = \frac{2 \times 2 \cdot 3}{3 \times 5} - \frac{2}{5} = \frac{4}{5} - \frac{2}{5} = \frac{2}{5}$$

$$E = \frac{-\frac{3}{4} + \frac{1}{2}}{\frac{2}{5} - \frac{5}{2}} = \frac{\frac{-3+2}{4}}{\frac{4-25}{10}} = \frac{\frac{-1}{4}}{\frac{-21}{10}} = \frac{1 \times 10}{4 \times 21} = \frac{1 \times 2 \cdot 5}{2 \cdot 2 \times 21} = \frac{5}{42}$$

$$F = \frac{-1 + \frac{1}{2} - \frac{1}{5} \cdot \frac{11}{7}}{\frac{-2}{5} + \frac{3}{2}} = \frac{\frac{-10+5-2}{10} \cdot \frac{11}{7}}{\frac{-4+15}{10}} \times \frac{2}{7} = -\frac{7}{10} \cdot \frac{10}{11} \times \frac{11}{2} \cdot \frac{1}{7} = -\frac{1}{2}$$

$$G = \frac{1 - \frac{1}{2} + \frac{1}{1 + \frac{1}{2}}}{1 + \frac{1}{2} - \frac{1}{1 - \frac{1}{2}}} = \frac{1 - \frac{1}{2} + \frac{1}{\frac{2+1}{2}}}{1 + \frac{1}{2} - \frac{1}{\frac{2-1}{2}}} = \frac{1 - \frac{1}{2} + \frac{1}{3}}{1 + \frac{1}{2} - \frac{1}{2}} = \frac{1 - \frac{1}{2} + \frac{2}{3}}{1 + \frac{1}{2} - 2} = \frac{6-3+4}{6} \times \frac{2}{2+1-4} = \frac{7}{6} \times \frac{2}{-1} = -\frac{7}{3}$$

$$H = \frac{2 + \frac{2}{5} + \frac{1}{3}}{1 + \frac{1}{5} + \frac{1}{6}} = \frac{\frac{30+6+5}{15}}{\frac{30+6+5}{30}} = \frac{41}{15} \times \frac{30}{41} = 2$$

$$J = \frac{1 - \frac{1}{3}}{\frac{2}{7} - 1} = \frac{\frac{3-1}{3}}{\frac{2-3}{7}} = \frac{\frac{2}{3} \cdot (-3)}{7 \cdot \frac{4}{21}} = -2 \times \frac{3}{4} = -\frac{3}{2}$$

$$K = \frac{\frac{5}{6} + \frac{3}{4} - \frac{1}{3}}{\frac{5}{6} - \frac{3}{4} + \frac{1}{3}} = \frac{\frac{10+9-4}{12}}{\frac{10-9+8}{12}} = \frac{15}{12} \times \frac{12}{9} = \frac{5}{3}$$

$$L = 3 + \frac{1}{\frac{1}{2} + \frac{5}{3}} - \frac{4 - \frac{14}{13}}{2} = 3 + \frac{1}{\frac{3+10}{6}} - \frac{\frac{52-14}{13}}{2} = 3 + \frac{6}{13} - \frac{38}{13} \cdot \frac{1}{2} = \frac{39+6-19}{13} = \frac{26}{13} = 2$$