Exercice 1 :

// : en parallèle

a) • $R + 2R + 3R = 6R$

• $2R + 2R = 4R$

$$R_{eq} = \frac{6R \times 4R}{(6+4)R} = \frac{24}{10}R = 2,4R$$

• $2,4R + R = \underline{3,4R}$

b) • $R + R = 2R$

• $2R // 2R = R$

• $R + R = 2R$

• $2R // 2R = \underline{R}$

c) • $2R + R = 3R$

• $3R // 2R = \frac{3R \times 2R}{(3+2)R} = \frac{6}{5}R$

• $\frac{6}{5}R + R = \frac{11}{5}R$

• $\frac{11}{5}R // R = \frac{\frac{11}{5}R \times R}{\frac{11}{5}R + R} = \frac{11}{5}R^2 \times \frac{5}{16R} = \underline{\frac{11}{16}R}$

d) $\left.\begin{array}{l} \cdot\ 4R \,//\, 4R = 2R \\ \cdot\ 4R + 2R = 6R \end{array}\right\}$ $R_{eq} = \dfrac{6R \times 2R}{(6+2)R} = \dfrac{12}{8}R = \dfrac{3}{2}R$

$\cdot\ \dfrac{3}{2}R \,//\, 2R = \dfrac{\frac{3}{2}R \times 2R}{\left(\frac{3}{2}+2\right)R} = \dfrac{6}{2}R^2 \times \dfrac{2}{7R} = \underline{\dfrac{6}{7}R}$

e) $\cdot\ R + R = 2R$

$\cdot\ 2R \,//\, 2R = R$

$\cdot\ R + 2R = 3R$

$\cdot\ 3R \,//\, 3R = 1,5R$

$\cdot\ 1,5R + 2R = \dfrac{3}{2}R + 2R = \dfrac{7}{2}R = \underline{3,5R}$

f) $\left.\begin{array}{l} R_3 \,//\, R_4 = \dfrac{R_3 R_4}{R_3 + R_4} \\ R_1 \,//\, R_2 = \dfrac{R_1 R_2}{R_1 + R_2} \end{array}\right\}$ $\underline{\dfrac{R_3 R_4}{R_3 + R_4} + \dfrac{R_1 R_2}{R_1 + R_2}}$