

$$\textcircled{I} \quad \frac{20}{100} = 0,2 \in \mathbb{D} ; \frac{3}{7} \in \mathbb{Q} ; \sqrt{\frac{16}{9}} = \frac{4}{3} \in \mathbb{Q}$$

$$-\frac{63}{9} = -6 \in \mathbb{Z} ; -\frac{21}{35} = -\frac{3}{5} = -0,6 \in \mathbb{D}$$

$$\frac{\sqrt{5}+2}{\sqrt{5}} = \frac{\sqrt{5}(\sqrt{5}+2)}{5} = \frac{5+2\sqrt{5}}{5} = 1 + \frac{2}{5}\sqrt{5} \in \mathbb{R} \setminus \mathbb{Q}$$

$$\frac{3,27}{3} = \frac{1}{100} \times \frac{327}{3} = \frac{109}{100} = 0,109 \in \mathbb{D}$$

$$(\sqrt{8}-\sqrt{2})^2 = (2\sqrt{2}-\sqrt{2})^2 = 2 \in \mathbb{N}$$

$$\textcircled{II} \quad 169,73 = 1,6973 \cdot 10^2 ; 0,00137 = 1,37 \cdot 10^{-3}$$

$$0,761 = 7,61 \cdot 10^{-1} ; 0,0973 = 9,73 \cdot 10^{-2}$$

$$\textcircled{III} \quad D = (\sqrt{5})^{-3} - \sqrt{125}$$

$$= \frac{1}{(\sqrt{5})^3} - 5\sqrt{5} = \frac{1}{5\sqrt{5}} - 5\sqrt{5} = \frac{\sqrt{5}}{25} - 5\sqrt{5}$$

$$= \frac{\sqrt{5} - 125\sqrt{5}}{25} = -\frac{124\sqrt{5}}{25}$$

$$\underbrace{\frac{25}{25}}_{\in \mathbb{Q}}$$

$$\textcircled{IV} \quad (\sqrt{3}-\sqrt{12})^2 = 3 - 2\sqrt{3}\sqrt{12} + 12$$

$$= 3 - 2\sqrt{36} + 12 = 15 - 2 \times 6 = 3$$

Donc  $C^2 = 3 \Rightarrow C = 3$  ou  $C = -3$  mais  $C < 0$  car  $\sqrt{3} < \sqrt{12}$

Donc  $C = -\sqrt{3}$ .

$$\textcircled{V} \quad A = \frac{21^3 \times (28)^{-4}}{2^{-9} \times 3^6} = \frac{(3 \times 7)^3 \times (2^2 \times 7)^{-4}}{2^{-9} \times 3^6} = \frac{3^3 \times 7^3 \times 2^8 \times 7^{-4}}{2^{-9} \times 3^6} = \frac{2}{7 \times 3^3}$$

$$B = \frac{\left(\frac{x^4 y^{-3}}{3x^{-1}}\right)^3 (x^{-2} y^5)^3}{(x^2 y^{-4})^3} = \frac{x^3 y^{-9} \times 3^{-3} x^3 \times x^{-6} y^{15}}{3^3 x^{-6} y^{12}} = \frac{x^6}{y^6 3^6} = \left(\frac{x}{y 3}\right)^6$$

$$\textcircled{VI} \quad \forall a, b, c \quad (a-b-c)(a+b+c) = (a-(b+c))(a+(b+c))$$

$$= a^2 - (b+c)^2 \quad (\text{identité remarquable})$$

② On déduit

$$(\sqrt{5}-\sqrt{3}-\sqrt{2})(\sqrt{5}+\sqrt{3}+\sqrt{2}) = 5 - (\sqrt{3}+\sqrt{2})^2$$

$$= 5 - (3 + 2\sqrt{3}\sqrt{2} + 2)$$

$$= 5 - 5 - 2\sqrt{6} = -2\sqrt{6}$$