⑥ La raison s'obtient en divisant un terme par son précédent :

$$q = \frac{u_2}{u_1} = \frac{\sqrt[3]{2}}{\sqrt{2}} = \frac{2^{1/3}}{2^{1/2}} = 2^{1/3 - 1/2} = 2^{-\frac{1}{6}}.$$

Vérifions :

$$u_1 = 2^{1/2}$$
$$u_2 = 2^{1/2} \cdot 2^{-1/6} = 2^{\frac{1}{2}-\frac{1}{6}} = 2^{\frac{1}{3}} = \sqrt[3]{2}$$
$$u_3 = 2^{1/3} \cdot 2^{-1/6} = 2^{1/6} = \sqrt[6]{2}$$
$$u_4 = 2^{1/6} \cdot 2^{-1/6} = 2^0 = 1.$$

Réponse A.

---

⑦ a) $u_7 = u_3 \cdot q^4 \rightarrow 54 = 6 \cdot q^4 \rightarrow q^4 = 9$

$\rightarrow q^2 = 3 \rightarrow q = -\sqrt{3}$ ou $q = \sqrt{3}$.

Vérifions :

si $q = -\sqrt{3}$: $6 \quad -6\sqrt{3} \quad 18 \quad -18\sqrt{3} \quad 54$

si $q = \sqrt{3}$: $6 \quad 6\sqrt{3} \quad 18 \quad 18\sqrt{3} \quad 54$

b) $u_1 = u_3 \cdot q^{-2} \rightarrow u_1 = 6 \cdot \frac{1}{q^2} \rightarrow u_1 = 2$.

$$S_{10} = 2 \cdot \frac{1 - (\pm\sqrt{3})^{10}}{1 \mp \sqrt{3}} = 2 \cdot \frac{1 - 3^5}{1 \mp \sqrt{3}} = \frac{-484}{1 \mp \sqrt{3}}$$

Si $q = \sqrt{3}$, alors $S_{10} = \frac{-484}{1 - \sqrt{3}} \simeq 661,1563$.

Si $q = -\sqrt{3}$, alors $S_{10} = \frac{-484}{1 + \sqrt{3}} \simeq -177,1563$.
