

Exercice

On considère une suite géométrique (u_n) de premier terme $u_1=1$ et de raison $q=-2$.

1. Calculer u_2 , u_3 et u_4 .
2. Calculer u_{30} .
3. Calculer la somme $S=u_1+u_2+u_3+\dots+u_{30}$.

Correction :

$$1. \boxed{u_2 = -2 \times u_1 = -2 \times 1 = -2}$$

$$\boxed{u_3 = -2 \times u_2 = -2 \times (-2) = 4}$$

$$\boxed{u_4 = -2 \times u_3 = -2 \times 4 = -8}$$

$$2. \boxed{u_{30} = u_1 \times (-2)^{29} = 1 \times (-2)^{-29} = (-2)^{-29}}$$

$$3. S = u_1 + u_2 + u_3 + \dots + u_{30}$$

$$S = u_1 \times \frac{1 - (-2)^{30}}{1 - (-2)}$$

$$\boxed{S = \frac{1 - 2^{30}}{3}}$$