DS2 - Fiches 8 à 11

(2) ⇒ Exercice n°1

1°/ (U_n) défini sur $\mathbb{N}$ par $U_n = 4n - 2$

2°/ (U_n) défini sur $\mathbb{N}$ par $\begin{cases} U_0 = 2 \\ U_{n+1} = 3U_n - 2 \end{cases}$

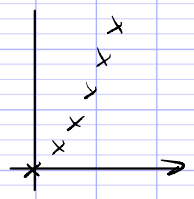
(6) ⇒ Exercice n°2

1°/ (U_n) (b)

2°/ $U_0 = 0^2 = 0$ (a) (c)

3°/ $U_2 = 3 \times U_1 = 3 \times 3 \times U_0 = 3 \times 3 \times 2 = 18$ (c)

4°/ $U_{n+1} = (n+1)^2 = n^2 + 2n + 1$ (b)

5°/  (c)

6°/ (a)

180 (2) ⇒ Exercice n°3

1°/ • $U_1 = 2\,000\,000$

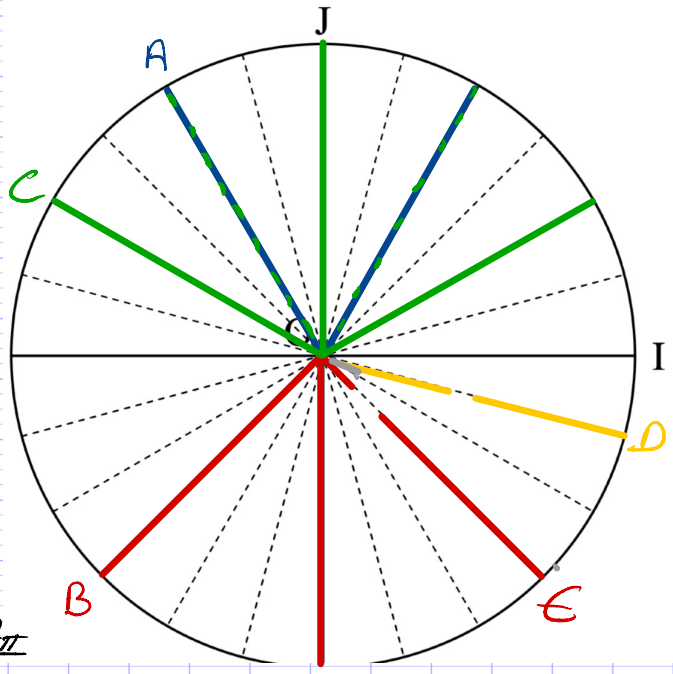
• $U_2 = \left(1 - \frac{5}{100}\right) \times U_1 + 200\,000$
$= 0,95 \cdot U_1 + 200\,000$
$= 2\,100\,000$

$U_3 = 0,95 U_2 + 200\,000$
$= 2\,195\,000$

$U_4 = 2\,285\,250$

2°/ $\forall n \in \mathbb{N}^*$, $U_{n+1} = 0{,}95 \times U_n + 20\,000$

300 (5) ⇒ Exercice n° 5



1°/ $\frac{2\pi}{3} \in]-\pi ; \pi]$

2°/ $-\frac{3\pi}{5} \in]-\pi ; \pi]$

3°/ $\frac{5\pi}{6} \in]-\pi ; \pi]$

4°/ $\frac{-\pi}{12} \in]-\pi ; \pi]$

5°/ $\frac{15\pi}{5} \notin]-\pi ; \pi]$

$\frac{15\pi}{5} - 2\pi = \frac{15\pi}{5} - \frac{8\pi}{5} = \frac{7\pi}{5}$

Or $\frac{7\pi}{5} > \pi$

$\frac{7\pi}{5} - 2\pi = \frac{7\pi}{5} - \frac{8\pi}{5} = \frac{-\pi}{5}$

Or $-\frac{\pi}{5} \in]-\pi ; \pi]$

(5) ⇒ Exercice n° 5

1°/ $U_0 = \frac{3^0}{5} = \frac{1}{5}$

$U_1 = \frac{3^1}{5} = \frac{3}{5}$

$U_2 = \frac{3^2}{5} = \frac{9}{5}$

2°/ La suite (U_n) semble croissante

3°/ $\forall n \in \mathbb{N}$, on a : $\frac{u_{n+1}}{u_n} = \frac{\frac{3^{n+1}}{4}}{\frac{3^n}{4}} = \frac{3^{n+1}}{4} \times \frac{4}{3^n}$

$= \frac{3^{n+1}}{3^n}$

$= \frac{3^n \times 3}{3^n}$

$= 3$

Or $3 > 1$

donc $\frac{u_{n+1}}{u_n} > 1$

donc $u_{n+1} > u_n$

donc (u_n) est croissante