SOLUTIONS DES EXERCICES SUR LES SUITES.

① a) $u_{20} = 5 + 19 \cdot (-3) = -52.$

b) $u_{50} = 5 + 49 \cdot (-3) = -142.$

$S_{50} = 50 \cdot \dfrac{5 + (-142)}{2} = -3425.$

c) $-6049 = 5 + (n-1) \cdot (-3) \rightarrow \dfrac{-6054}{-3} = n-1$

$\rightarrow n = 2019.$

② Il s'agit d'additionner les termes d'une S.A. telle que $u_1 = -2$ et $r = 7$.

$u_n = 551 = -2 + (n-1) \cdot 7 \rightarrow \dfrac{553}{7} = n-1 \rightarrow n = 80.$

$-2 + 5 + 12 + \cdots + 551 = S_{80} = 80 \cdot \dfrac{-2 + 551}{2} = 21960.$

③ a) $u_{30} = u_{20} + 10 \cdot r \rightarrow 12,5 = 15 + 10 \cdot r$

$\rightarrow -2,5 = 10 \cdot r \rightarrow r = -\frac{1}{4}$

b) $u_{20} = u_1 + 19 \cdot r \rightarrow 15 = u_1 - \dfrac{19}{4} \rightarrow u_1 = \dfrac{79}{4}$

④ 1°/ $1 + 3 + 5 + \cdots + 2019 = ?$ $2019 = 1 + (n-1) \cdot 2$

$\rightarrow n = 1010$

$S_N = 1010 \cdot \dfrac{1 + 2019}{2} = 1010 \cdot 1010$

2°/ $2 + 4 + 6 + \cdots + 2018 = ?$ $2018 = 2 + (n-1) \cdot 2$

$\rightarrow n = 1009$

$S_D = 1009 \cdot \dfrac{2 + 2018}{2} = 1009 \cdot 1010$

Finallement : $\dfrac{S_N}{S_D} = \dfrac{1010 \cdot 1010}{1009 \cdot 1010} = \dfrac{1010}{1009}.$

⑤ a) $u_{10} = 24 \cdot \left(\dfrac{1}{4}\right)^9 = \dfrac{3}{32768}$

b) $\dfrac{3}{128} = 24 \cdot q^{n-1} \rightarrow \dfrac{1}{1024} = \left(\dfrac{1}{4}\right)^{n-1} \rightarrow n-1 = 5$

$\rightarrow n = 6$

c) $S_{10} = 24 \cdot \dfrac{1 - \left(\frac{1}{4}\right)^{10}}{1 - \frac{1}{4}} = 31,99996948$

d) $\lim\limits_{n \to \infty} S_n = \dfrac{1}{1 - \frac{1}{4}} \cdot 24 = 32.$