Corrigés — Suites numériques

Chapitre 4

Solution 1.
1. $u_{\{10\}} = u_1 + 9r = 3 + 45 = 48$.
2. $S = 20\frac{u_1+u_{\{20\}}}{2} = 10(3+98) = 1010$.

Solution 2.
$v_5 = 2 \times 1\{,\}5^5 = 2 \times 7\{,\}59375 = 15\{,\}1875$. $S = 2\frac{1-1\{,\}5^{\{11\}}}{1-1\{,\}5} = 2\frac{1\{,\}5^{\{11\}}-1}{0}\{,\}5 = 4\big(1\{,\}5^{\{11\}}-1\big) \approx 4 \times 85\{,\}50 \approx 342$.

Solution 3.
$C_8 = 5000(1 + 8 \times 0\{,\}03) = 5000 \times 1\{,\}24 = 6200$ DH.

Solution 4.
1. $C_8 = 5000 \times 1\{,\}03^8 \approx 5000 \times 1\{,\}2668 \approx 6333\{,\}85$ DH.
2. Intérêts composés 6334 DH > simples 6200 DH. $1\{,\}03^n \geq 2 \Leftrightarrow n \ln 1\{,\}03 \geq \ln 2 \Leftrightarrow n \geq \ln\frac{2}{\ln}1\{,\}03 \approx 23\{,\}45$. Donc $n = 24$ ans.

Solution 5.
$V_{\{10\}} = 2000 \times \frac{1\{,\}04^{\{10\}}-1}{0}\{,\}04 \approx 2000 \times \frac{1\{,\}4802-1}{0}\{,\}04 = 2000 \times 12\{,\}006 \approx 24012$ DH.

Solution 6.
1. $u_1 = 5, u_2 = 13, u_3 = 29$.
2. $v_{n+1} = u_{n+1} + 3 = 2u_n + 6 = 2(u_n + 3) = 2v_n$. (v_n) géométrique de raison 2, $v_0 = 4$.
3. $v_n = 4 \times 2^n = 2^{n+2}$, donc $u_n = 2^{n+2} - 3$.