

# Snippets pour Opytex

## Suites

Benjamin Bertrand

16 juillet 2019

### 1 Calculs de termes

1. Calculer les termes  $u_0$ ,  $u_1$ ,  $u_2$ ,  $u_{10}$  et  $u_{100}$  pour les suites suivantes

(a)  $\forall n \in \mathbb{N} \quad u_n = 9n - 2$

Solution :

$$u_0 = 9 \times 0 - 2 = 0 - 2 = -2$$

$$u_1 = 9 \times 1 - 2 = 9 - 2 = 7$$

$$u_2 = 9 \times 2 - 2 = 18 - 2 = 16$$

$$u_{10} = 9 \times 10 - 2 = 90 - 2 = 88$$

$$u_{100} = 9 \times 100 - 2 = 900 - 2 = 898$$

(b)  $\forall n \in \mathbb{N} \quad v_n = \frac{9n + 3}{6}$

Solution :

$$v_0 = \frac{9 \times 0 + 3}{6} = \frac{0 + 3}{6} = \frac{3}{6}$$

$$v_1 = \frac{9 \times 1 + 3}{6} = \frac{9 + 3}{6} = \frac{12}{6}$$

$$v_2 = \frac{9 \times 2 + 3}{6} = \frac{18 + 3}{6} = \frac{21}{6}$$

$$v_{10} = \frac{9 \times 10 + 3}{6} = \frac{90 + 3}{6} = \frac{93}{6}$$

$$v_{100} = \frac{9 \times 100 + 3}{6} = \frac{900 + 3}{6} = \frac{903}{6}$$

(c)  $\forall n \in \mathbb{N} \quad v_n = \frac{4n-2}{4}$

Solution :

$$\begin{aligned}v_0 &= \frac{4 \times 0 - 2}{4} = \frac{0 - 2}{4} = \frac{-2}{4} \\v_1 &= \frac{4 \times 1 - 2}{4} = \frac{4 - 2}{4} = \frac{2}{4} \\v_2 &= \frac{4 \times 2 - 2}{4} = \frac{8 - 2}{4} = \frac{6}{4} \\v_{10} &= \frac{4 \times 10 - 2}{4} = \frac{40 - 2}{4} = \frac{38}{4} \\v_{100} &= \frac{4 \times 100 - 2}{4} = \frac{400 - 2}{4} = \frac{398}{4}\end{aligned}$$

(d)  $\forall n \in \mathbb{N} \quad v_{n+1} = 5v_n$  et  $v_0 = 4$

Solution :

$$\begin{aligned}v_0 &= 4 \\v_1 &= 5 \times 4 = 20 \\v_2 &= 5 \times 20 = 100\end{aligned}$$

Pour le terme 10, il faut calculer tous les autres avant !

$$\begin{aligned}v_3 &= 5 \times 100 = 500 \\v_4 &= 5 \times 500 = 2500 \\v_5 &= 5 \times 2500 = 12500 \\v_6 &= 5 \times 12500 = 62500 \\v_7 &= 5 \times 62500 = 312500 \\v_8 &= 5 \times 312500 = 1562500 \\v_9 &= 5 \times 1562500 = 7812500 \\v_{10} &= 5 \times 7812500 = 39062500\end{aligned}$$