Suites

$$\mathbb{N} \longrightarrow \mathbb{R}$$
$$n \longmapsto f(n) = x_n$$

$x_n = n^2$ $\qquad$ $x_{18} = 18^2$

$$x_n = \frac{1}{n^2}$$

$\frac{1}{1} \quad \frac{1}{4} \quad \frac{1}{9} \quad \frac{1}{16} \quad \frac{1}{25} \quad \dots$

2.1.1

1	2	3	4
$\frac{12}{2}$	$\frac{\frac{12}{2}+12}{2}$	$\frac{\frac{\frac{12}{2}+12}{2}+12}{2}$	$\frac{\frac{\frac{\frac{12}{2}+12}{2}+12}{2}+12}{2}$

$$12 \cdot \frac{1}{2} \quad \Big| \quad 12\left(\frac{1}{4}+\frac{1}{2}\right) \quad \Big| \quad 12 \cdot \left(\frac{1}{8}+\frac{1}{4}+\frac{1}{2}\right) \quad \Big| \quad 12\left(\frac{1}{16}+\frac{1}{8}+\frac{1}{4}+\frac{1}{2}\right)$$

Après n jours

$$\boxed{12 \cdot \sum_{k=1}^{n} \frac{1}{2^k}} = X_n$$

$$\sum_{k=1}^{\infty} \frac{1}{2^k} \overset{?}{=} 1$$

$$(1-x)\left(1+x+x^2+x^3+x^4+ \dots + x^n\right) = 1-x^{n+1}$$

$$1+x+\dots+x^n = \frac{1-x^{n+1}}{1-x}$$

$$1+\frac{1}{2}+\dots+\frac{1}{2^n} = \frac{1-\frac{1}{2^{n+1}}}{1-\frac{1}{2}} = 2\cdot\left(1-\frac{1}{2^{n+1}}\right)$$

$\frac{1}{2}$

$$1 + \frac{1}{2} + \dots + \frac{1}{2^n} = 2 - \frac{1}{2^n}$$

$$\frac{1}{2} + \dots + \frac{1}{2^n} = 1 - \frac{1}{2^n}$$

$$\sum_{k=1}^{\infty} \frac{1}{2^k} = 1 - \frac{1}{2^{\infty}}$$