

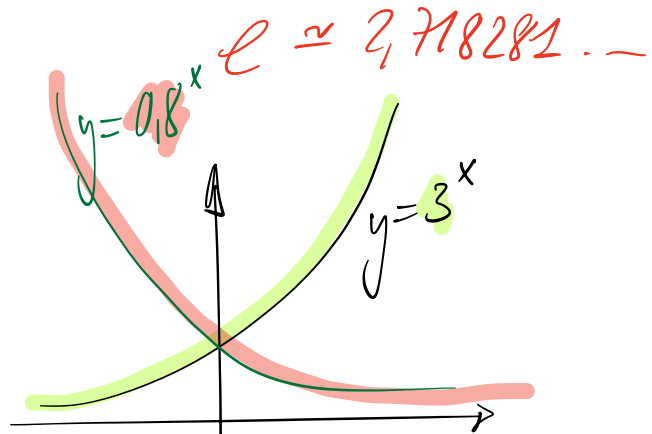
$$P(t) = 106 \cdot e^{kt}$$

$$= 106 \cdot (e^k)^t$$

$$2^{m \cdot n} = (2^m)^n$$

$$P(t) = 106 \cdot 2^t$$

$t=0$



$$P(0) = 106 \cdot e^{k \cdot 0} = 106 \cdot \underbrace{e^0}_1 = 106$$

$$= 106 \cdot \underbrace{2^0}_1 = 106$$

$$P(t) = P_0 \cdot 2^t$$

2)

t	$P(t)$
0	106
12	36

$$P(t) = P_0 \cdot e^{kt}$$

$$P(12) = 106 \cdot e^{k \cdot 12} = 36$$

Inconnue \leftarrow dans \rightarrow la puissance.

$$e^{k \cdot 12} = \frac{36}{106} \approx 0,339623$$

$$e^x = u \Leftrightarrow x = \ln u$$

$$k \cdot 12 = \ln\left(\frac{36}{106}\right) = \ln(0,339623)$$

$$k = \ln\left(\frac{36}{106}\right) \cdot \frac{1}{12} \approx \frac{\ln(0,339623)}{12}$$

$$P(t) = 106 \cdot e^{-0,089993 \cdot t}$$

$$k \approx -0,089993$$

$$P(t) = 106 \cdot 2^t = P_0 \cdot 2^t$$

A savoir par ♥

t	P(t)
0	106
12	36

$$P(12) = 36 \quad (\text{taken})$$

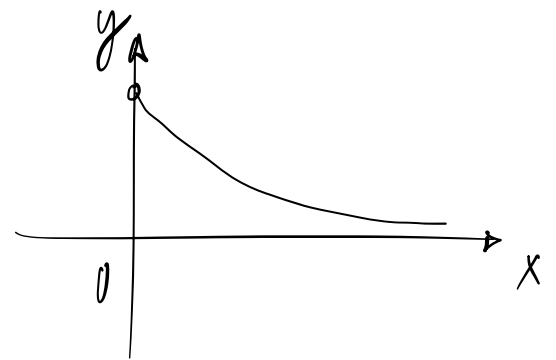
$$P(12) = 106 \cdot 2^{12}$$

$$36 = 106 \cdot 2^{12}$$

$$2^{12} = 0,339623$$

$$2 = \sqrt[12]{0,339623} \approx 0,913937$$

$$\Rightarrow P(t) \approx 106 \cdot 0,913937^t$$



$$b) P(16) \approx 106 \cdot 0,913937^{16} \approx 25$$

$$c) 106 \cdot 0,913937^t = 16 \Leftrightarrow 0,913937^t = \frac{16}{106} \approx 0,150943$$

$$\Leftrightarrow 0,913937^t \approx 0,150943$$

$$2^x = u \Leftrightarrow x = \log_2 u \Leftrightarrow t \approx \log_{0,913937} 0,150943$$

Environ 21 ans

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$t \simeq$

$$\frac{\text{LN } 0,150943}{\text{LN } 0,913937} \simeq 21,01$$

après le début de l'étude.

$$d) P(100) = 106 \cdot 0,913937^{100} \simeq 0,0131$$

La pop. tend vers 0.