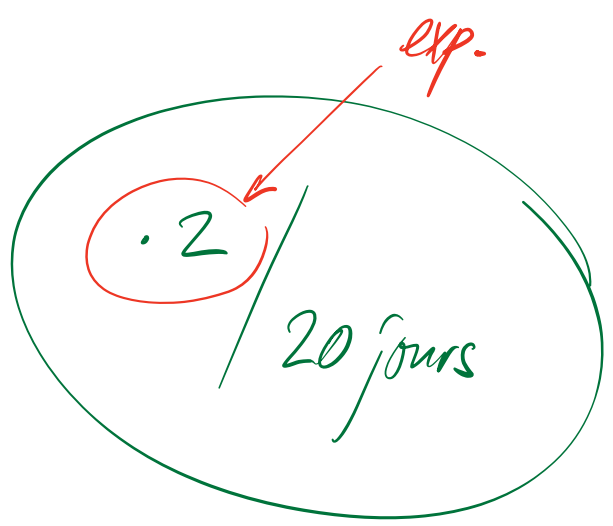


PREMIÈRE PARTIE

a)

# jours	# abeilles infectées
n	$Q(n)$
0	23
$n=20$	46
40	92

Q_0
 $\cdot 2$
 $Q(20)$
 $\cdot 2$



b)

$$Q(n) = Q_0 \cdot 2^n$$

$Q_0 = ?$
 $2 = ?$

$$Q(0) = Q_0 \cdot \underbrace{2^0}_{=1} = Q_0 = 23$$

$$\Rightarrow Q(n) = 23 \cdot 2^n$$

$$Q(20) = 46 = 23 \cdot 2^{20}$$

$$\frac{46}{23} = 2^{20}$$

$$2^{20} = 2 \quad / \quad 2 = \sqrt[20]{2} \approx 1,035265$$

$$Q(n) \cong 23 \cdot 1,035265^n \cong 23 \cdot 2^{\frac{n}{20}}$$

DEUXIÈME PARTIE

$$f(t) = 25 + 110 \cdot 0,2^{\frac{t}{8}}$$

a) $t=0$

$$f(0) = 25 + 110 \cdot 0,2^{\frac{0}{8}} = 25 + 110 \cdot 1 = 135 \text{ } ^\circ\text{C}$$

b) $t=10$

$$f(10) = 25 + 110 \cdot 0,2^{\frac{10}{8}} = 25 + 110 \cdot 0,2^{1,25} \cong 39,7 \text{ } ^\circ\text{C}$$

$$c) 25 + 110 \cdot 0,2^{\frac{t}{8}} = 30$$

$$110 \cdot 0,2^{\frac{t}{8}} = 5$$

$$0,2^{\frac{t}{8}} = \frac{5}{110}$$

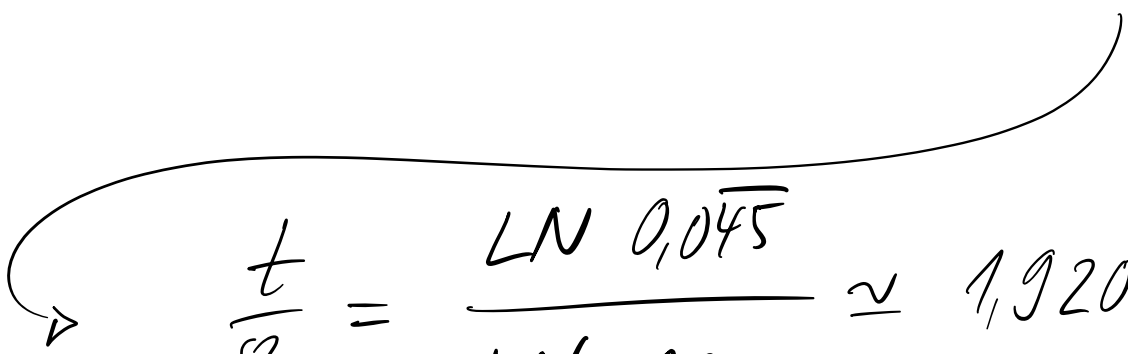
-25

÷ 110

Formulaire

$$\rightarrow 2^x = u \Leftrightarrow x = \log_2 u$$

$$\frac{t}{8} = \log_{0,2} (0,045)$$


$$\frac{t}{8} = \frac{\text{LN } 0,045}{\text{LN } 0,2} \approx 1,92057$$

$$t = 8 \cdot 1,92057 \approx 15,36$$

↖ -60

$$t \approx 15 \text{ min } 22 \text{ sec}$$