

3.2 Corrigé

1. a) $2h \rightarrow 63 \text{ km}^2$
 $4h \rightarrow 141,75 \text{ km}^2$

$$63 = a B^2$$

$$141,75 = a B^4 \rightarrow \frac{a B^4}{a B^2} = \frac{141,75}{63}$$

$$B^2 = 2,25$$

$$B = 1,5$$

$$a(1,5)^2 = 63$$

$$a = 28$$

$$A(t) = 28(1,5)^t$$

b) $260 = 28(1,5)^t$
 $9,2857 = 1,5^t$
 $\log 9,2857 = \log 1,5^t$
 $\frac{\log 9,2857}{\log 1,5} = \frac{t \log 1,5}{\log 1,5}$

$$t = 5,5 \text{ h}$$

c) La superficie touchée augmente de 50% à toutes les heures.

2. $Q(t) = 2(1 - 0,61^t)$
 $= 2 - 2(0,61)^t$
 $= -2(0,61)^t + 2$

c) $Q(5) = -2(0,61)^5 + 2$
 $= 1,83 \text{ C}$

d) Maximale $\rightarrow 2 \text{ C}$

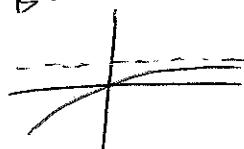
a) $t \geq 0 \Rightarrow D_Q = [0, +\infty[$

b) $a < 0$ et $B < 1$ c

$B < 1$ et $a > 0$



$B < 1$ et $a < 0$



CROISSANTE

$$3. \quad M(x) = 40 (0,9)^{x/2} + 70$$

$$a) \quad M(0) = 40 (0,9)^{0/2} + 70 \\ = 110 \text{ kg}$$

b) $M = 70 \text{ kg} \rightarrow$ Poids minime de Rogatien

$$c) \quad M = 40 (0,9)^{t/2} + 70 \\ = 99,16 \text{ kg}$$

$$110 - 99,16 = 10,84 \text{ kg}$$

$$d) \quad \text{Perdre } 20 \text{ kg} \rightarrow M(x) = 90 \text{ kg} \\ 90 = 40 (0,9)^{t/2} + 70$$

$$\frac{20}{40} = \frac{40 (0,9)^{t/2}}{40}$$

$$\frac{1}{2} = (0,9)^{t/2}$$

$$\log \frac{1}{2} = \log 0,9^{t/2}$$

$$\log \frac{1}{2} = \frac{t}{2} \log 0,9$$

$$t = \frac{2 \log \frac{1}{2}}{\log 0,9}$$

$$t = 13,15$$

1 an, 1 mois et 5 jours.

$$4. \quad 0 \rightarrow 72000$$

$$9 \rightarrow \frac{1}{4}(72000) \\ 18000$$

$$V(t) = 72000 \left(\frac{1}{4}\right)^{t/9}$$

$$a) \quad V(4) = 72000 \left(\frac{1}{4}\right)^{4/9}$$

$$= 72000 (0,54)$$

$$= 38882,15 \text{ \$}$$

$$b) \quad V(1) = 72000 \left(\frac{1}{4}\right)^{1/9} \\ = 72000 (0,857)$$

$$1 - 0,857 = 0,143$$

$$14,3\%$$

$$c) \quad V(t) = 72000 (0,857)^t$$

5.

$$N(t) = 1000 (1+i)^{4t/4}$$

$$a) 1082,85 = 1000 (1+i)^{4(2)}$$

$$\frac{1082,85}{1000} = \frac{1000(1+i)^8}{1000}$$

$$1,08285 = (1+i)^8$$

$$\sqrt[8]{1,08285} = 1+i$$

$$1,01 = 1+i$$

$$i = 0,01$$

$$V(t) = 1000 (1,01)^{4t}$$

$$2000 = 1000 (1,01)^{4t}$$

$$2 = (1,01)^{4t}$$

$$\log 2 = \log 1,01^{4t}$$

$$\log 2 = 4t \log 1,01$$

$$b) V(t) = 1000 (2)^{t/17,41}$$

$$t = \frac{\log 2}{4 \log 1,01}$$

$$t = 17,41 \text{ ans}$$