

$$1. (T - 20)' = k(T - 20)$$

$$\text{D'où } T(t) = 20 + Ce^{kt},$$

$$T(0) = 20 + C = 70,$$

$$C = 50.$$

$$T(5) = 20 + Ce^{5k} = 60$$

$$\text{Donc } k = \frac{\ln\left(\frac{4}{5}\right)}{5}$$

$$2. T(30) \approx 33 \text{ }^{\circ}\text{C}$$

$$T(t) = 40 \Leftrightarrow t = \frac{5 \ln \frac{2}{5}}{\ln \frac{4}{6}} \approx 20,53.$$

À la minute près, il faudra 21 minutes pour atteindre 40 °C.