Higher Maths
SQA 2018 Specimen
Paper 2 Question 13

The concentration of a pesticide in soil can be modelled by the equation

$$P_t = P_0 e^{-kt}$$

where:

- P_0 is the initial concentration;
- P_t is the concentration at time t;
- t is the time, in days, after the application of the pesticide.

(a) It takes 25 days for the concentration of the pesticide to be reduced to one half of its initial concentration.

Calculate the value of k. **4**

(b) Eighty days after the initial application, what is the percentage decrease in concentration of the pesticide? **3**

Answers:

(a) $k \approx 0 \cdot 028$

(b) 89%