§3.4.3

問題A

(1) $\int \frac{dN}{N} = -\lambda \int dt$

$\ln N = -\lambda t + C$

$N = k e^{-\lambda t}$

→ 初期条件から $N_0 = k$ したがって.

$N = N_0 e^{-\lambda t}$

(2) $\frac{N_0}{2} = N_0 e^{-\lambda T}$

$-\ln 2 = -\lambda T \quad \therefore T = \frac{\ln 2}{\lambda} = \frac{0.693}{2.3 \times 10^{-2}} = 30.1 \text{ year}$

(3) $N = N_0 e^{-\frac{\ln 2}{T} \times t}$

$= N_0 e^{\ln 2^{-\frac{t}{T}}}$

$= N_0 2^{-\frac{t}{T}}$

$= N_0 \left(\frac{1}{2}\right)^{\frac{t}{T}}$