

§ 5.2.1

問題 A

$$\begin{aligned} \text{I} \quad x &= e^{-\mu_0 t} (A e^{i\Omega t} + B e^{-i\Omega t}) \\ &= e^{-\mu_0 t} (A \cos \Omega t + iA \sin \Omega t + B \cos \Omega t - iB \sin \Omega t) \\ &= e^{-\mu_0 t} \{ (A+B) \cos \Omega t + i(A-B) \sin \Omega t \} \\ &= e^{-\mu_0 t} \{ C \cos \Omega t + D \sin \Omega t \} \quad \text{と置く。} \end{aligned}$$

$$\begin{aligned} \text{2} \quad v = \frac{dx}{dt} &= e^{-\mu_0 t} \{ -\mu_0 C \cos \Omega t - \mu_0 D \sin \Omega t - C \Omega \sin \Omega t + D \Omega \cos \Omega t \} \\ &= e^{-\mu_0 t} \{ (-\mu_0 C + D \Omega) \cos \Omega t - (\mu_0 D + C \Omega) \sin \Omega t \} \end{aligned}$$

$$\begin{aligned} \text{3} \quad x(0) = C &= 1 \\ v(0) = -\mu_0 C + D \Omega &= 0 \end{aligned} \quad \left. \vphantom{\begin{aligned} x(0) = C \\ v(0) = -\mu_0 C + D \Omega \end{aligned}} \right\} D = \frac{\mu_0}{\Omega}$$

LT 表 7.

$$x(t) = e^{-\mu_0 t} \left\{ \cos \Omega t + \frac{\mu_0}{\Omega} \sin \Omega t \right\}$$

減衰項 × 振動項