

§4.5.1

問題A

$$(1) x = A \cos \omega_0 t + B \sin \omega_0 t$$

$$v = \frac{dx}{dt} = -\omega_0 A \sin \omega_0 t + \omega_0 B \cos \omega_0 t$$

$$\frac{dv}{dt} = \frac{d^2x}{dt^2} = -\omega_0^2 A \cos \omega_0 t - \omega_0^2 B \sin \omega_0 t = -\omega_0^2 x \quad \text{となり, (4.37) は (4.36) を満たしている。}$$

$$(2) \begin{cases} x(0) = A = 1 \\ v(0) = \omega_0 B = 0 \end{cases} \quad B = 0$$

$$(3) \begin{cases} x(t) = \cos \omega_0 t \\ v(t) = -\omega_0 \sin \omega_0 t \end{cases}$$