特性方程式が二重解を持つ場合

$$\frac{d^2x}{dt^2} - 4\frac{dx}{dt} + 4x = 0$$

$$\lambda^2 - 4\lambda + 4 = 0$$

$$\lambda = 2 \text{（二重解）}$$

$$x = (C_1 x + C_2)e^{2t}$$

確かめ

$$\frac{dx}{dt} = (2C_1 x + C_1 + 2C_2)e^{2t}$$

$$\frac{d^2x}{dt^2} = (4C_1 x + 4C_1 + 4C_2)e^{2t}$$

$$(\text{左辺}) = \left[(4 - 8 + 4)C_1 x + (4 - 4)C_1 + (4 - 8 + 4)C_2\right] e^{2t}$$

$$= 0$$