

Mathematics - I

CHAPTER - LDE (Linear Differential Equations)

Q1. Solve: $\frac{d^3y}{dx^3} + 6\frac{d^2y}{dx^2} + 11\frac{dy}{dx} + 6y = 0$

Q2. Solve: $(D^2 - 3D + 2)y = 6e^{-3x} + \sin x$

Q3. Solve: $(D^2 - 3D + 2)y = 2e^x \cdot \cos \frac{x}{2}$

Q4. Solve by method of variation of parameters: $y'' - 2y' + 2y = e^x \tan x$

Q5. Solve by method of variation of parameters: $y'' - 2y' + y = e^x \log x$

Q6. Solve by method of variation of parameters: $\frac{d^2y}{dx^2} + 4y = \tan 2x$

Q7. Solve: $x^2 \frac{d^2y}{dx^2} - 3x \frac{dy}{dx} + 5y = x^2 \sin(\log x)$

Q8. Solve: $x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} - 4y = x^2 + 2 \log x$

Q9. Solve: $x^2 \frac{d^2y}{dx^2} + 2x \frac{dy}{dx} - 12y = x^3 \log x$

Q10. Solve: $x^2 \frac{d^2y}{dx^2} - 2x \frac{dy}{dx} + 2y = x^2 + \sin(\log x)$

Q11. Solve: $(1+x)^2 \frac{d^2y}{dx^2} + (1+x) \frac{dy}{dx} + y = \sin[2 \log(1+x)]$

Q12. Solve: $(1+2x)^2 \frac{d^2y}{dx^2} - 6(1+2x) \frac{dy}{dx} + 16y = 8(1+2x)^2$