

1. Solve $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = 0$ (25%)

2. Find Laplace transform $\mathcal{L}[e^{2x} - e^{3x}]$ (25%)

3. Show that $\int_0^{2\pi} \frac{d\theta}{5 + 4\cos\theta} = \frac{2\pi}{3}$ (25%)

4. Solve $\frac{dy}{dt} = y$ (25%)