Solve the equation $y'' - 6y' + 9y = t$
with $y(0) = 0$ and $y'(0) = 1$ using

1. Undetermined coefficients
2. Variation of parameters and Wronskians
3. Laplace transforms

Solve the system of equations using Laplace transforms

$$\frac{d^2 x}{dt^2} + \frac{dx}{dt} + \frac{dy}{dt} = 0$$
with $x(0) = 1$, $x'(0) = 0$
$$\frac{d^2 y}{dt^2} + \frac{dy}{dt} - 4 \frac{dx}{dt} = 0$$
$y(0) = -1$, $y'(0) = 5$

Solve the linear equation

$$xy' + (1+x)y = e^{-x}\cos 2x$$

Solve the exact equation

$$\frac{(1 - 3 + x)}{y} \frac{dy}{dx} + y = \frac{3 - 1}{x}$$