1. If \( y_1 = x^2 \) is a solution of \( x^2 y'' + 2xy - 6y = 0 \), then find its second solution by reduction of order formula.

2. Solve the boundary-value problem:
\[
y'' - 10y' + 25y = 0, \quad y(0) = 1, \quad y(1) = 0.
\]

3. Find linearly independent functions annihilated by differential operator \( D^2 - 6D + 10 \).
1. If \( y_1 = x^2 \) is a solution of \( x^2 y'' - 3xy' + 4y = 0 \), then find the general solution of this DE on \((0, \infty)\).

2. Find the annihilator of the function \( g(x) = 8 - x^2 + x \sin 3x + 3e^{2x} \cos 4x + e^{2x} \sin 4x \).
1. If \( y_1 = x^{-1/2} \sin x \) is a solution of \( x^2 y'' + xy' + \left( x^2 - \frac{1}{4} \right) y = 0 \), then find the second solution of this DE by reduction of order formula.

2. Find general solution of \( y'' + 3y' = 3x - 8 \).