

EDDE. PROBLEM SET 6

1. Find the general solutions of the following differential equations:

a)  $y''(x) + y'(x) - 2y(x) = 0$ ;

b)  $y''(x) + y'(x) - 2y(x) = e^{-x}$ ;

c)  $y''(x) + y'(x) - 2y(x) = 3e^x$ ;

d)  $y''(x) + y'(x) - 2y(x) = 2e^x \cdot \sin x$ ;

e)  $y''(x) + y'(x) - 2y(x) = 2x^2 + \sin x$ .

2. Solve each of the above equations together with the initial conditions  $y(0) = y'(0) = 0$ .

3. Solve the differential equations:

a)  $y''(x) + y'(x) = e^{-x} + 2x - 1$ ;

b)  $y''(x) = 2y'(x) - 2y(x) + xe^x \sin x$ ;

c)  $y''(x) = 2y'(x) - 2y(x) + e^x \sin^2 x$ ;

d)  $y''(x) = 2y'(x) - y(x) + \frac{e^x}{x}$ .