

King Fahd University of Petroleum & Minerals
Department of Mathematical Sciences
MATH - 260 Semester o82 **Quiz - 4**

Name: _____ ID# _____ Section# _____

Problem 1.

Solve the initial value problem

$$y'' + 4y' + 4y = 2x - \sin 3x, \quad y(0) = 0, \quad y'(0) = -1$$

Problem 2.

Determine a form for y_p for the differential equation

$$y''' + 8y'' + 16y = 4x - 2e^{4x} - \cos 4x + 2x \sin 2x$$

(You don't need to find the values of the coefficients)

Problem 3.

Use the method of variation of parameters to find the general solution for the differential equation

$$2y'' - 4y' + 4y = e^x \tan x$$

Problem 4.

Find the eigenvalues of A and a basis for each of the corresponding eigenspaces

$$A = \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 5 & -10 \\ 1 & 0 & 2 & 0 \\ 1 & 0 & 0 & 3 \end{pmatrix}$$