

NDU
MAT 235
Ordinary Differential Equations
Make Up Exam # 2

Duration: 55 minutes

Name: _____

Section: _____

Instructor: _____

Grade: _____

MAT 235 – Make Up Exam #2; Thursday August 5, 2004

Name:

Instructor:

**Please note that you have 5 questions and 7 pages
and your mobile must be turned off and unseen**

- 1) (15 points) Find the general solution of the differential equation $x^3 y'' + xy' - y = 0$, for $x > 0$, given that $y_1 = x$ is a particular solution.

- 2) (15 points)** Find the general solution of the differential equation
- $$y''' - 3y'' + 2y' = x + e^x + 19\cos x.$$

3) (15 points) Solve the following differential equation $x^2 y'' + 5xy' + 4y = \frac{1}{x^2}$; for $x > 0$.

4) (15 points) Solve the differential equation $y^{(5)} + 6y''' + 9y' = 0$.

5) (30 points) Given $x(1-x)y'' + 2(1-x)y' + 2y = 0$, for $x > 0$.

a) Show that $x_0 = 0$ is a regular singular point.

b) Find the indicial roots.

c) Find the generalized power series solution in powers of x .

