NDU

MAT 235
Ordinary Differential Equations

Exam # 2

Duration: 55 minutes

Name: _____

Section: A
Instructor: Dr. Ishac Zoghbi

Grade: _____

— —

MAT 235 – Exam #2;   Monday August 2nd, 2004

Name:

Instructor: Dr. Ishac Zoghbi

1) **(20 points)** Solve $yy'' + y'^2 = y'$.

2) **(23 points)** Solve the following differential equation.

$$y'' - 7y' + 12y = e^{3x} + x + 10\sin x$$

3) **(22 points)** Find the general solution of $x^2 y'' - 2xy' + 2y = x^2 \ln x$, for $x > 0$

4) **(35 points)** Given $x^2 y'' + xy' - \left(x^2 + \dfrac{1}{4} \right) y = 0$, for $x > 0$.

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

b) Find the indicial roots.

c) Use the method of Frobenius to find the generalized power series solution in powers of x.