NDU

MAT 235
Ordinary Differential Equations

Exam # 1

Duration: 55 minutes

Name: _____

Section: A
Instructor: Dr. Ishac Zoghbi

Grade: _____

MAT 235 – Exam #1; Thursday July 15, 2004

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Please note that you have 6 questions and 6 pages and your mobile must be turned off and unseen

1) **(10 points)** Solve the initial-value problem:

$$\left(8x^3y - 12x^3\right)dx + \left(x^4 + 1\right)dy = 0\,;\ y(0) = 1$$

2) (15 points) Solve $\frac{dy}{dx} + 4xy = \frac{8x}{y^3}$.

3) (20 points) Solve $y' = \dfrac{x^3 + 2x^2y + y^3}{x^3 + xy^2}$.

4) **(20 points)** Find the orthogonal trajectories of the family of curves $y = c\left(x + \frac{1}{x}\right)$.

5) **(15 points)** Solve the differential equation $y' = \dfrac{e^{(4x+y-5)}}{(4x+y-5)^2} - 4$.

6) **(20 points)** Solve the following differential equation
$\left(x^2 - xy + 2y^2 + x + 2\right)dx + \left(x^2 - 2xy\right)dy = 0$.