

NDU

MAT 235

Ordinary Differential Equations

Exam # 1

Thursday November 14, 2002

Duration: 55 minutes

Name: _____

Section: _____

Instructor: _____

Grade: _____

1) (20 points) Solve $(x^4 + 2y^3)dx + 2xy^2dy = 0$.

2) (20 points) Solve $y' + y = e^x y^2 - e^{-x}$ given that $y_1 = e^{-x}$ is a particular solution.

3) (20 points) Solve $\frac{dy}{dx} + 1 = \cot(x + y)$.

4) (20 points) Find the orthogonal trajectories of the family of curves given by

$$y = \frac{x}{1 - cx}.$$

5) (20 points) Solve $xy \frac{dy}{dx} - y^2 = x + 1$ with $y(1) = 2$.