NDU

Notre Dame University

MAT 235

Ordinary Differential Equations

Exam 2

Duration: 55 minutes

Name:

Section:

Instructor:

Grade:

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1) (25 points) Solve the following differential equation for $x > 0$:

$$y'' - \frac{2}{x} y' + \frac{2}{x^2} y = x \sin x$$

2) (15 points) Find the general solution of the differential equation

$$(x^2 - 1)y'' - 2xy' + 2y = 0 \qquad (x > 1)$$

given that x is a particular solution.

3) (20 points) Solve the initial-value problem $yy'' = (y')^2$ with $y(0) = y'(0) = 1$.

4) (40 points) By using two different methods, solve the differential equation

$$y'' = xe^x + y$$