# NDU

# MAT 235

## **Ordinary Differential Equations**

#### **Exam # 2**

#### **Duration: 55 Minutes.**

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Instructor: \_\_\_\_\_

Grade: \_\_\_\_\_

1) (20 points) Use the method of undetermined coefficients to solve the following differential equation.

 $y'' - 3y' + 2y = e^x \sin x$ 

2) (20 points) Solve the differential equation

$$y'' - 4y' + 4y = \frac{e^{2x}}{x+1}$$

3) (25 points) Solve the initial value problem

$$y'' - \frac{6}{x^2}y = \frac{\ln x}{x^2}$$
 for  $x > 0$  with  $y(1) = \frac{1}{6}$ ,  $y'(1) = \frac{-1}{6}$ 

4) (35 points) Find the generalized power series solution in powers of x, of xy'' + (1-2x)y' - (1-x)y = 0.