Name _____

Prince of Songkla University

Faculty of Engineering

Midterm Test   Semester 1/2007

3 August 2007   9:00-12:00

215-613 Mathematical Methods in Engineering   Room: A 303

Direction:

1. All types of calculators, document and books are permitted.

2. There are totally 3 problems. Solve all of them.

Midterm Test
Semester 1/2007
Total 50 points

Problem #	Full Score	Your mark
1	20	
2	10	
3	20	
Total	50	

Perapong Tekasakul

Instructor

Name _____

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1. Solve (20 points)

$$x^2 y'' - 2xy' + 2y = x^3$$

$$y(1) = 0$$
$$y'(1) = 2$$

2. Solve (10 points)

$$xy'' - 5y' + xy = 0$$

Hint: $y = x^3 u$

2. Solve (10 points)

$$xy'' - 5y' + xy = 0$$

Hint: $y = x^3 u$

3. The motion of the mass-spring-damper system is described by

$$y'' + 2y' - 3y = \delta(t-2) + 2u(t-3)$$

The initial conditions for the system are

$$y(0) = 0 \quad \text{and} \quad y'(0) = 0$$

Determine the response $y(t)$. (20 points)