

Form No. T631

Philadelphia University  
Faculty of Engineering

Student Name:  
Student Number:

Dept. of Communications & Electronics  
First Exam, Summer Semester: 2004/2005

Course Title: Engineering Analysis I	Date: 26/07/2005
Course No: (630201)	Time Allowed: 1 Hours
Lecturer: Dr. Abdel-Rahman Al-Qawasmi	No. of Pages: 1
Section 3	

**Question 1:** *(5 Marks)*

**Objective:** About Separable Differential Equations  
Solve the following Initial Value Problem.

$$y' = \cot y \cos x \quad , y(0) = \pi$$

**Question 2:** *(4 Marks)*

**Objective:** About Exact Differential equations

a- Check the Exactness and find the general solution.

$$y \sinh x dx + \cosh x dy = 0$$

**Question 3:** *(6 Mark)*

**Objective:** Method of reduction of order

Use method of reduction of order to find  $y_2$  and find the particular solution if:

$y_1 = x^{-2}$  and

$$x^2 y'' + 5xy' + 4y = 0$$

$y(1) = 5, y'(1) = 2$

**Question 4:** *(5 Mark)*

**Objective:** Nonlinear first order differential equations

Solve the following nonlinear differential equation and find the particular solution

$$y' = y + xy^2 \quad y(0) = 1$$