



Kingdom of Saudi Arabia King Abdulaziz University

Faculty of Science – Mathematics Department
First Mid-Term Exam (90 Minutes) - (204 Math).
8/5/1435 H – 9/3/2014 A.D. First Semester
1434-1435 H

Model : B

Name:	Section:
Student's I.N. :	Serial Number:

Q_1	Q_2	Q_3	Q_4	Q_5	Total Marks (25)

(Answer the following questions)

- 1** Solve the differential equation $\frac{dy}{dx} = y^2 - 36$ and show that [7 Marks]
 $y = -6$ is a singular solution.

2 Solve the differential equation:

[6 Marks]

$$(x + y)^2 dx + (2xy + x^2 - 1) dy = 0$$

3 Solve the differential equation:

[6 Marks]

$$ydx + x(\ln x - \ln y - 1)dy = 0$$

4 Solve the differential equation:

[6 Marks]

$$\frac{dy}{dx} + \frac{1}{x}y = x y^2$$

- 5 A 12 – volt electromotive force is applied to an LR series circuit in which the inductance is 0.1 henry and the resistance is 10 ohms. Find the current $i(t)$ if $i(0) = 0$. Determine the current as $t \rightarrow \infty$. **[5 Marks]**