



Kingdom of Saudi Arabia
King Abdulaziz University

Faculty of Science – Mathematics Department
First Mid-Term Exam (90 Minutes) - (204 Math).
25/12/1434 H – 30/10/2013 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 (30)

(Answer the following questions)

- 1 According to the Existence and Uniqueness Theorem [6 Marks]**
prove the I.V.P. $\frac{dy}{dx} = \sqrt{xy}$, $y(2) = 1$ has unique solution.

2 Solve the differential equation:

[6 Marks]

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

3 Solve the differential equation:

[6 Marks]

$$\frac{dy}{dx} = 2 + \sqrt{y - 2x + 4}$$

4 Solve the differential equation:

[6 Marks]

$$\frac{dy}{dx} = \frac{x + 3y}{3x + y}$$

- 5 A 30 – volt electromotive force is applied to an LR series circuit in which the inductance is 0.1 henry and the resistance is 50 ohms. Find the current $i(t)$ if $i(0) = 0$. Determine the current as $t \rightarrow \infty$. **[6 Marks]**