

Kingdom of Saudi Arabia
Ministry of higher Education
Al-Imam Muhammad Ibn Saud
Islamic University

— College of Sciences —

Department: Mathematics

Semester/Year: First semester 1431-1432 (2010-2011)

Duration: 01 h 30 mns

المملكة العربية السعودية
وزارة التعليم العالي
جامعة الامام محمد بن سعود الاسلامية
كلية العلوم

Course Name: Calculus II

Course Code: MATH 102

Instructors:

Drs S. MZIOU and F. BELLALOUNA

MIDTERM 1

Question 1. *Use the appropriate integral technique to find the following integrals*

a) $\int \sin^3 x \cos^2 x \, dx$

b) $\int_{-1}^1 x^2 \sqrt{x^3 + 1} \, dx$

c) $\int x^2 \ln x \, dx$

Question 2. *Calculate the following integrals of rational functions*

a) $\int_0^2 \frac{1}{4 + x^2} \, dx$

b) $\int \frac{x^3 - 2x^2}{x^2 - 3x - 4} dx$

Question 3. *Investigate the convergence or divergence of the following improper integrals*

a) $\int_{-\infty}^{\infty} x \exp -x^2 \, dx$

b) $\int_0^2 \frac{3}{x^2} \, dx$