King Fahd Univ. of Petroleum and Minerals
Faculty of Sciences
Department of Mathematical Sciences

MAJOR No. 1
(MATH. 102-042 Sections 1 & 2)

Name:
ID:

Prob. 1

Find the integral $\int\limits_{0}^{3} x^3 dx$ by using the partition method.

Prob. 2

a) Find $\int\limits_{-3}^{7} |2x + 6|\, dx$

b) Prove that the function $F(x) = \int\limits_{0}^{x} \frac{dt}{1+t^2} + \int\limits_{0}^{1/x} \frac{dt}{1+t^2}$ is constant on $(0, \infty)$.

Prob. 3

a) Compute $\int\limits_{0}^{2} x3^{2x^2}dx$

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

Prob. 4

Find the integral

$$\int \frac{dx}{3\sin^2 x + 7\cos^2 x}$$

Prob. 5

Find

$$\int \frac{\cos 5x}{\sqrt{3 + 2\sin 5x}}dx$$

Prob. 6
Calculate $\int \frac{e^{2x}\,dx}{e^x+3}$