

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

MAJOR No. 1  
(MATH. 102-043 Sections 1 & 2)

**Name:**  
**ID:**

**Prob. 1**  
Calculate  $\int \tan 2x dx$

**Prob. 2**

a) Find the left-end point, right-end point and mid-point approximation ( $n = 10$ ) for

$$\int_0^2 (3x^2 - 5x) dx$$

b) find the exact area using the limit.

**Prob. 3**

Find  $\int_{-2}^2 |7x + 4| dx$

**Prob. 4**

Compute  $\int_0^2 \frac{e^x - e^{-x}}{e^x + e^{-x}} dx$

**Prob. 5**

Find the integral

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

**Prob. 6**

Find

$$\int \frac{x^2}{\sqrt[3]{x+3}} dx$$

**Prob. 7**

Compute  $\int \frac{4dx}{x(\ln x+1)^2}$