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

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

Name:
ID:

Prob. 1
Calculate $\int \frac{\sin(25 \ln x)}{15x} dx$

Prob. 2

Find $\int \frac{1}{x^2+4x+7}dx$

Prob. 3

Find the area between $y = \sin x$ and $y = \cos x$ from $x = 0$ to $x = 2\pi$.

Prob. 4

Compute the arc length of $y = x^4 + \frac{1}{32x^2}$ from $x = 1$ to $x = 2$.

Prob. 5

What is the lateral surface area when we revolve $y = x^{1/3}$ about the y-axis between $x = 0$ and $x = 8$?

Prob. 6

Use cylindrical shells to find the volume about by revolving the area in the first quadrant between $x = 2y^3 - y^4$ about the x-axis.

Prob. 7

Find by two different methods the volume when the region bounded by $y = \cos x$ and $y = x^4$ is revolved about the

a) $x = 2$
b) $y = 2$
c) x-axis
d) y-axis

Prob. 8

Sketch the region and axis of revolution that produces the solid whose volume is given by

a) $\int_0^1 2\pi x(x - x^2)dx$

b) $\int_0^2 2\pi(4 - y)(y + y)dy$

c) $\int_0^1 \pi \left[y - y^2\right] dy$