Prince Sultan university
Department of Mathematics
Major I Exam
Semester I ,2007-2008 Fall(071)
03.11.2007
Math 113-Calculus II

Time Allowed: 90 minutes

Name:

ID Number:

Instructions:

1. Answer all the questions.
2. Show your work in the spaces provided for each question.

Question	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7
Grade							

Question.1 Evaluate the following integrals:

a) $\int \frac{2x+4}{\sqrt{2x^2+8x+3}} dx$

b) $\int_0^{\frac{\pi}{4}} 4\sin x \cos x dx$

Question.2 Given the function $F(x) = \int_4^{\pi} \sqrt{t^2+9} dt$. Find $F(4), F'(4)$ and $F''(4)$.

Question.3 Find the total area between the curve $y = 1 - x^2$ and the *x*-axis over the interval [0,3]. Sketch the graph of the region.

Question.4 Use cylindrical shells to find the volume of the solid generated when the region enclosed between $y = \sqrt{x}, x = 1, x = 4$ and the *x*-axis is revolved about the *y*-axis.

Question.5 Find the arc length of the graph of $f(x) = x^{\frac{3}{2}} + 1$ for $0 \le x \le 4$.

Question.6 Find the area of the surface that is generated by revolving the portion of the curve $y = x^2$ between $x=1$ and $x=2$ about the y-axis.

Question.7 Find the volume of the solid generated when the region between the graphs of the equations $f(x) = \frac{1}{2} + x^2$ and $g(x) = x$ over the interval [0,2] is revolved about the x-axis.