Prince Sultan University

Department of Mathematics and Physical Sciences

Math 113
First Midterm Exam
Semester I, Term 131
Monday, October 28, 2013

Time Allowed: 90 minutes

Name:

Student Number:

Grading Policy:

Questions	Q.1	Q.2	Q.3	Q.4	Q.5	Q.6	Q.7	Total
Student's Mark								
Maximum Mark	8	8	26	8	10	10	10	80

Statement of Ethics:

I agree to complete this exam without unauthorized assistance from any person, materials, or device.

Signature:

Problem 1: Use the midpoint rule with $n = 4$ to approximate the integral $\int_0^8 \sin\sqrt{x}\,dx$.

Problem 2: Use the Fundamental Theorem of Calculus (FTC) to find the derivative of the function $g(x) = \int_{1-2x}^{1+2x} t\sin t\,dt$.

Problem 3: (6+5+7+8 pts) Evaluate the following integrals

1. $\int_1^2 \frac{2+3t^{-4}}{\sqrt{t}}dt$	2. $\int_0^{\pi/4} \frac{1+\cos^2\theta}{\cos^2\theta}d\theta$

3. $\int x(3x+8)^6 dx$

4. $\int x^2 \sin 2x dx$

Problem 3: Let $f(x) = (x-3)^2$. Find $c \in [2,5]$ such that $f_{ave} = f(c)$.

Problem 5: Find the area of the region enclosed by $y = \sqrt{x-1}$ and $x - y = 1$.

Problem 6: Find the volume of the solid obtained by rotating the region bounded by $y = 1 - x^2$ and $y = 0$, about the $x - axis$.

Problem 7: Use the method of cylindrical shells to find the volume generated by rotating the region bounded by $y = x^3, y = 0, and\ x = 1$, about the axis $y = 1$.