

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 $\int\limits_0^8 \sin \sqrt{x} dx \, .$

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.
$$\int_{1}^{2} \frac{2+3t^{-4}}{\sqrt{t}} dt$$

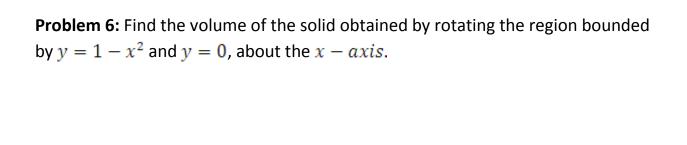
$$2. \int_{0}^{\pi/4} \frac{1+\cos^2\theta}{\cos^2\theta} d\theta$$

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

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

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 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.