

MATH 32B
FIRST MIDTERM EXAMINATION

October, 22nd, 2007

Please show your work. You will receive little or no credit for a correct answer to a problem which is not accompanied by sufficient explanations. If you have a question about any particular problem, please raise your hand and one of the proctors will come and talk to you. At the completion of the exam, please hand the exam booklet to your TA. If you have any questions about the grading of the exam, please see the instructor *within 15 calendar days of the examination*.

Name: _____ Section: _____

#1	#2	#3	#4	#5		Total

Problem 1. Compute the integral $I = \int \int_R \frac{xy^2}{x^2 + 1} dA$, where $R = [0, 1] \times [-3, 3]$.

Problem 2. Find the volume of the solid bounded by the surfaces $y = x^2$, $y = 1$, $z = 0$ and $z = x^2 + y^2$.

Problem 3. Compute the integral

$$\int_0^{\frac{1}{\sqrt{2}}} \int_x^{\sqrt{1-x^2}} \arctan\left(\frac{y}{x}\right) dy dx$$

Problem 4. Find the volume of the part of the sphere $x^2 + y^2 + z^2 = 9z$ that lies inside of the paraboloid $z = x^2 + y^2$.

Problem 5. A student wants to have a sandwich and a cup of coffee for lunch. He is getting the sandwich at Slow Serve Sandwich Shop, where the average time to get a sandwich equals to $\mu = 1$ hr. After that, the student goes to Confused Coffeemakers, where on average it takes $\mu = 1$ hr to get a cup of coffee. What is the probability that if a student goes for lunch at 11 a.m. he will get it before 1 p.m.? (Your answer should be a number rounded to the nearest 10%).