Group Exam 5

Calculus II

Professor Johnson

Fall 2006

Name: _____

Name of group member: _____

Name of group member: _____

Problem 1: One of the two integrals below can be evaluated using u-substitution and the other requires using trig substitution. Identify the integral which *requires* trig substitution and evaluate that integral.

$$\int_0^3 x^2\sqrt{9-x^2}\,dx \qquad\qquad \int_0^3 x^3\sqrt{9-x^2}\,dx$$

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Problem 2: Find the antiderivative.

$$\int \frac{1}{\sqrt{4x^2 + 12x + 10}} \, dx$$

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Problem 3: A doughnut shaped solid is formed by rotating the circle given by $(x - 3)^2 + y^2 = 4$ about the y-axis. Sketch the doughnut and find the volume of this doughnut.