

## Math 187 – Quiz #2

February 15, 2013

Name: \_\_\_\_\_

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Total: 25 points

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Evaluate the following integrals.

1.  $\int \frac{3x dx}{5 - 4x^2}$  (3 points)

2.  $\int \frac{e^{2x} dx}{\sqrt{e^{2x} + 5}}$  (3 points)

3.  $\int \sin^3 \theta d\theta$

(3 points)

4.  $\int_0^{\pi/4} e^{\sin 2\theta} \cos 2\theta d\theta$

(3 points)

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5. Find the arc length of the curve  $y = \ln(\cos x)$  over the interval  $0 \leq x \leq \frac{\pi}{4}$ . Give an exact answer or round your answer to two decimal points. (3 points)

6. Consider the solid generated by revolving around the  $y$ -axis the first quadrant region bounded by  $y = 9 - x^2$  and the  $x$ - and  $y$ -axes. (5 points)

a) Calculate the volume of this solid.

b) Locate the centroid of this solid.

Give exact answers and/or approximations rounded to one decimal place.

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7. Find the moment of inertia with respect to the  $y$ -axis for the thin, flat, uniform plate in the shape of the region bounded by  $y = x^2$  and  $y = \sqrt{x}$ . Give your answer in exact form or rounded to three decimal places. (5 points)