

# Math 2315 - Calculus II

Homework #7

Assigned - 2010.02.03

Due - 2010.02.08

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

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Textbook problems:

Section 7.3 - 1, 2, 3, 8, 10, 13, 16, 20, 23, 26, 27, 31, 32, 36

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Fun Problems:

1. Remember the identity  $\cot^2(x) + 1 = \csc^2(x)$ . Compute the following integrals:

a)

$$\int \cot^3(x) \csc(x) dx$$

b)

$$\int \cot^4(x) \csc^2(x) dx$$

2. Prove the reduction formula

$$\int \tan^k(x) dx = \frac{1}{k-1} \tan^{k-1}(x) - \int \tan^{k-2}(x) dx$$

Hint:  $\tan^k(x) = (\sec^2(x) - 1) \tan^{k-2}(x)$ .

3. Prove that

$$\int \sin^2(x) \cos^3(x) dx = \frac{1}{30} (7 + 3 \cos(2x)) \sin^3(x) + C$$