

MATH. 125, QUIZ 8 - Section 5.1 & 5.2 (25points = 5% final grade)

1. (7 points each) Establish the following trigonometric identities; write clearly each step. You may get extra/bonus credit for presenting and explaining your solutions in a professional way (like in the textbook).

(a)

$$\frac{\tan x + \cot x}{\csc x} = \sec x$$

Proof:

(b)

$$1 - \frac{\sin^2 t}{1 + \cos t} = \cos t$$

Proof:

go to the next page

2. (5 points) NO calculator allowed. Simplify the final answer. Find the exact value of

$$\cos 105^\circ =$$

3. (8 points) NO calculator allowed. Find the exact value of $\sin 2\alpha$ under the following conditions:

$$\sin \alpha = \frac{1}{3}, \quad \frac{\pi}{2} < \alpha < \frac{3\pi}{2}.$$

Simplify the final answer. You may get extra/bonus credit for presenting and explaining your solutions in a professional way (like in the textbook).

Solution:

$$\sin 2\alpha =$$