Math 25
B. Wagner

Unit 5 Written Assignment
(due Thursday Oct. 19)

1. Prove the following identity:

$$\frac{1+\tan^2 x}{2\tan x} = \csc(2x)$$

Your proof should follow the form described on the second page of section 7.3 (or 8.3 of the 6th edition). More specifically, start with one side of the identity and, using appropriate identities and algebraic manipulations, gradually work your way to the other side. Connect each expression with an equals sign, and work your way down the page. In other words, your final proof should have the form

$$\begin{aligned} \text{one side} &= \ldots \\ &= \ldots \\ &= \ldots \\ &\vdots \\ &= \text{ other side} \end{aligned}$$

Note that the examples in the textbook all use this form for their proofs of identities.

2. Suppose that $\cot x = -3$, $\cos x > 0$, and $0 \leq x < 2\pi$. Compute the exact value of $\cos\left(\frac{x}{2}\right)$. (It will probably be helpful to include an appropriate picture for this problem, although it is not required.)

Reminders:
• Follow the Homework Guidelines given on the web page
http://online.redwoods.edu/instruct/bwagner/math25/units/HWguidelines.html
Remember that I expect clear, neat, and complete solutions on these problems.
Be sure to use graph paper for your graphs, and label the scales on your axes.
• Each written assignment will be graded on a scale from 0 to 6. Any score above 3 will be added as a bonus to your exam and pretest scores, while any score below 3 will be subtracted. For example, a score of 5 will give you 2 bonus points, while a score of 1 would cost you 2 penalty points.
• Unit 4 rewrites are also due on Thursday Oct. 19.