Math 312 Spring 98

Quiz 8 — Complex Analysis

Name: _____

Date: _____ **Friday April 3**
Time Begun: _____ Ron Buckmire
Time Ended: _____

Topic : Cauchy's Residue Theorem

The idea behind this quiz is for you to gain experience with the applications of Cauchy's Residue Theorem and evaluating contour integrals using Cauchy's Integral Formula.

Instructions:

1. Once you open the quiz, you have as much time as you need to complete it, but record your start time and end time at the top of this sheet.
2. You may use the book or any of your class notes. You must work alone.
3. If you use your own paper, please staple it to the quiz before coming to class. If you don't have a stapler, buy one.
4. After completing the quiz, sign the pledge below stating on your honor that you have adhered to these rules.
5. Your solutions must have enough details such that an impartial observer can read your work and determine HOW you came up with your solution.
6. Sometime over the weekend I will post a hint on solving this quiz on the Complex Analysis wwwboard at `http://abacus.oxy.edu/wwwboard/complex` . You can access the board by using the login and password `complex`. If you do not understand the hint or have any other questions you should post a response on the wwwboard.
7. Relax and enjoy...
8. **This quiz is due on Monday April 6**, in class. NO LATE QUIZZES WILL BE ACCEPTED.

Pledge: I, _____, pledge my honor as a human being and Occidental student, that I have followed all the rules above to the letter and in spirit.

Math 312 Spring 1998 **SHOW ALL YOUR WORK** Quiz **8**

1. Consider the function $f(z) = \csc(z) = \dfrac{1}{\sin(z)}$

(a) (*6 points*) Show that the cosecant function $\csc(z)$ has poles of order 1 at integer multiples of π with residue equal to 1 at each pole.

(b) (*4 points*) Use the above information to evaluate the integral $\oint_C \csc(z)\ dz$ where C is the circle $|z| = 4$ traversed **twice** in the **clockwise** direction.