

Quiz 5

Complex Analysis

Name: _____

ASSIGNED: Friday February 19
DUE: Monday February 22

Time Begun: _____

Time Ended: _____

Prof. Ron Buckmire

Topic : The Complex Exponential

The **learning goal** of this quiz is to provide an opportunity to demonstrate facility and understanding with the complex exponential function.

Reality Check:

EXPECTED SCORE : _____/10

ACTUAL SCORE : _____/10

Instructions:

1. Once you open the quiz, you have **30 minutes** to complete, please 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. QUIZZES WITH UNSTAPLED SHEETS WILL NOT BE GRADED.
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. Relax and enjoy...
7. **This quiz is due on Monday February 22**, in class. NO LATE OR UNSTAPLED 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.

1(a) (*3 points*) What is the image D' of the set $D = \{z \in \mathbb{C} : 0 \leq \operatorname{Re}(z) \leq \pi\}$ under the mapping $w = e^z$? **Sketch the image and pre-image sets.** Write down a definition of D' in set notation.

1(b) (*3 points*) What is the image B' of the set $B = \{z \in \mathbb{C} : 0 \leq \operatorname{Im}(z) \leq \pi\}$ under the mapping $w = e^z$? **Sketch the image and pre-image sets.** Write down a definition of B' in set notation.

1(c) (*4 points*) Find all solutions of $e^z = -4$ where $z \in \mathbb{C}$. Draw a picture indicating the location of the solution points in the complex plane.