## Quiz **9**

**Name**: _____

Date: _____                                **Monday April 7**
Time Begun: _____                    Ron Buckmire
Time Ended: _____

## **Topic covered:** Improper Integrals

The point of this quiz is for you to demonstrate your understanding of the concepts of convergence or divergence of an infinite series.

## **Reality Check:**

EXPECTED SCORE : _____/**10**                 ACTUAL SCORE : _____/**10**

## **Instructions:**

1. Once you open the quiz, you have 30 minutes to complete it. Before you open the quiz you should check Blackboard.oxy.edu for a HINT.

2. You **may not** use the book or any of your class notes, but you may use a calculator. You must work alone.

3. If you use extra 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. Complete the reality check to give yourself a sense of how well you think you did on the quiz.

5. Relax and enjoy....

6. **This quiz is due on Wednesday, April 9**, at the beginning of 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.

# EXPLAIN YOUR ANSWERS

Two students are discussing calculus and you overhear their conversation.

Sydney: The zero-limit test is the best test for infinite series! I just proved that the harmonic series $\sum_{k=1}^{\infty} \frac{1}{k}$ converges because I know $\lim_{k \to \infty} \frac{1}{k} = 0$. As long as the last term of an infinite series is zero, it must converge.

Madison: That's not right! You should use the comparison test. I can show that $\frac{1}{k}$ is greater than 1 for all $k > 1$. Then since we know $\frac{1}{k}$ is positive for all $k > 1$ and since $\sum_{k=1}^{\infty} 1$ DIVERGES, this will prove that the harmonic series is greater than a divergent series, and thus also diverges.

Comment on the understanding of calculus displayed by the two students. In at least four (4) clear, legible sentences identify any correct and incorrect statements made by the students. If a statement is incorrect explain why. Does the harmonic series converge or diverge? **You must be careful not to make any incorrect statements yourself in your explanation.** PROOFREAD YOUR ANSWER.