

# Quiz 7: Exam 3 Review

November 11th, 2016

Don't forget your name: \_\_\_\_\_ Score: \_\_\_\_\_ /40

1) Let  $r = \frac{1}{2} + \sin(\theta)$ .

(5 pts) This curve crosses itself one time when  $0 \leq \theta \leq 2\pi$ . Give cartesian (rectangular) equations for both tangent lines at this point.

(5 pts) Set up, but do not evaluate, an integral for the length of the curve between the intersecting point.

(5 pts) Set up, but do not evaluate, an integral for the area enclosed by the curve between the intersections.

2) Decide whether each of the following series converge absolutely, conditionally, or if they diverge. Be sure to state which test you use, and to verify its' hypotheses.

(5 pts)  $\sum_{n=9}^{\infty} \frac{1}{n \ln(n) \ln(\ln(n))}$

(5 pts)  $\sum_{n=1}^{\infty} \frac{(2n)^n}{(2n)!}$

(5 pts)  $\sum_{n=1}^{\infty} \left(3^{\frac{1}{n}} - 1\right)$  (Hint: use limit comparison)

(5 pts)  $\sum_{n=1}^{\infty} \left(1 + \frac{1}{n}\right)^{-n^2}$

3) (5 pts) Repeatedly toss a fair coin. What is the probability that the first tails occurs on an even-numbered toss?

*rules:*

1. This review does not claim to be (nor is it) comprehensive. It is intended to help you prepare for the exam.
2. Do not write work or answers on this paper (just your name). Staple it on top of your work.
3. *This will be presentation quality.* Papers with scratch work or large erasures will not be graded, and multiple pages must be stapled together. Papers may not have frilly edges.
4. This is due at the beginning of class on Monday, November 14th.
5. Failure to follow these instructions will result in a score of 0.