Math 2300-007: Quiz 10

Name: _____   Score: _____

Collaborators:

Directions: This take-home quiz will be due at the beginning of class on Tuesday, April 10. You may use your notes, textbook, and colleagues from our class as resources, but your final write-up should be in your own words. If you work with collaborators from our class, please include their names on this quiz.

1. To what value does the series $\displaystyle\sum_{n=1}^{\infty} \frac{(-9)^n}{(2n)!}$ converge?

2. Find $T_4(x)$, the fourth degree Taylor Polynomial for $f(x) = \sqrt{x}$ at $a = 1$. If you use $T_4(2)$ as an estimate for $\sqrt{2}$, what does Taylor's Inequality say about the error in your estimate?

3. Why does $\sum_{n=0}^{\infty} \frac{x^n}{n!}$ converge to e^x for all x? Why is it not enough to just use the ratio test to find the interval of convergence of the series?

4. Use Taylor Series to find $\displaystyle \lim_{x \to 0} \frac{x - \arctan(x)}{x^3}$.