

Name: \_\_\_\_\_

Math 121

Self-Assessment Quiz #10

April 29, 2022

- Please see the course webpage for the answer key.

1. (a) Write the MacLaurin Series for  $f(x) = x^4 \arctan(2x)$ . State the Radius of Convergence.

(b) Use this Series to determine the **seventh**, **eighth**, and **ninth** derivatives of  $f(x) = x^4 \arctan(2x)$  evaluated at  $x = 0$ . Do NOT simplify your answer this time.

**SKIP 1(b) Here, Spring 2022**

2. (a) Use the Infinite Series  $\sum_{n=1}^{\infty} \frac{4^n}{n!}$  to compute  $\lim_{n \rightarrow \infty} \frac{4^n}{n!} =$ .

(b) Use the Infinite Series  $\sum_{n=1}^{\infty} \frac{n!}{n^n}$  to compute  $\lim_{n \rightarrow \infty} \frac{n!}{n^n} =$ .