Name:_____

Math 121 Self-Assessment Quiz #10 November 18, 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 $\lim_{n\to\infty} \frac{4^n}{n!} =$.

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