Name:____

Math 121

Self-Assessment Quiz #8

November 11, 2022

- Please see the course webpage for the answer key.
- 1. Find the Interval and Radius of Convergence for the following power series. Analyze carefully and with full justification.

$$\sum_{n=0}^{\infty} \frac{(-1)^n (7x-3)^n}{(n+1) \ 5^{n+1}}$$

2. Find the Interval and Radius of Convergence for the following power series. Analyze carefully and with full justification.

$$\sum_{n=1}^{\infty} \frac{(-1)^n \ln n \ (x+5)^n}{n^2 \ 4^n}$$

3. Find the MacLaurin Series representation for each of the following functions. State the Radius of Convergence for each series. You answer should be in sigma notation $\sum_{n=0}^{\infty}$.

(a)
$$f(x) = \frac{x^2}{1+5x}$$

(b)
$$f(x) = x^7 \sin(x^2)$$

(c)
$$f(x) = x \arctan(3x)$$

(d)
$$f(x) = x^4 e^{-x^3}$$

(e)
$$f(x) = x^3 \ln(1+x^3)$$

(f)
$$f(x) = x^2 \cos(4x)$$