Name:\_\_\_\_

Math 121

Self-Assessment Quiz #8

April 23, 2021

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