LAST NAME: FIRST NAME:

MATH 009C - Summer 2018

Worksheet 7: August 7, 2018

1. Determine the radius and interval of convergence for the following power series.

(a) $$\sum_{n=1}^{\infty} \frac{n^3}{3^n}(x+1)^n$$

(b) $$\sum_{n=1}^{\infty} (-1)^n \frac{2^n}{n!}(x-2)^n$$

Please, show all work.

2. Use the definition of Taylor series to compute the 3rd order Taylor polynomial $T_3(x)$ for the following function. **NOTE: Do not use the substitution question to do this problem, or you will receive no credit**.

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

Please, show all work.

3. Determine the Taylor Series for the following functions.

(a) $\displaystyle\int \cos(x^3)\, dx$

(b) $\dfrac{x - \arctan(x)}{x^2}$

Please, show all work.