

Problem Set 31

1) What is a Taylor series generated by a function f ? A Taylor polynomial? A Maclaurin series? How are these terms related to “power series”?

2) Determine the Taylor series of $f(x) = \frac{1}{x}$ centered at $a = 2$.

3) Determine the Maclaurin series of $f(x) = e^x$.

4) Find the Taylor polynomials of orders 0, 1, 2, and 3 generated by f at a .

a) (10.8.6)

$$f(x) = \frac{1}{x+2}, a = 0$$

b) (10.8.8)

$$f(x) = \tan x, a = \pi/4$$

5) Find the Maclaurin series for each function.

a) (10.8.12)

$$xe^x$$

b) (10.8.18)

$$5 \cos \pi x$$

6) Find the Taylor series generated by f at $x = a$.

a) (10.8.28)

$$f(x) = 1/(1-x)^3, \quad a = 0$$

b) (10.8.30)

$$f(x) = 2^x, \quad a = 1$$