

Problem Set Sections 11.10

Taylor and Maclaurin Series

Memorize Maclaurin Series listed in the table in section 11.10 (page 768).

Problem 1

Find the Maclaurin series for (Assume that f has a power series expansion)

$$f(x) = e^{-2x}$$

Problem 2

Find the Maclaurin series for (Assume that f has a power series expansion)

$$f(x) = 2^x$$

Problem 3

Find the Maclaurin series for (Assume that f has a power series expansion)

$$f(x) = \sin 3x$$

Problem 4

Find the Taylor series for $f(x)$ centered at the given value of a .

$$f(x) = \ln x, \quad a = 2$$

Problem 5

Find the Taylor series for $f(x)$ centered at the given value of a .

$$f(x) = e^{2x}, \quad a = 2$$

Problem 6

Use the binomial series to expand the given function as a power series

$$f(x) = \sqrt[3]{8+x}$$

Problem 7

Find the sum of the series

$$\sum_{n=0}^{\infty} \frac{(-1)^n \pi^{2n}}{6^{2n} (2n)!}$$

