WebAssign
Hw 28 (11.10): Taylor and Maclaurin Series (Homework)

Yinglai Wang
MA 162 Spring 2012, section 321, Spring 2012
Instructor: Jonathan Montano

Current Score : 20 / 20 **Due :** Tuesday, April 3 2012 11:55 PM EDT

1. 2.85/2.85 points | Previous Answers SCalcET7 11.10.007.

Find the Maclaurin series for $f(x)$ using the definition of a Maclaurin series. [Assume that f has a power series expansion. Do not show that $R_n(x) \to 0$.]

$$f(x) = \sin\left(\frac{\pi x}{4}\right)$$

$$f(x) = \sum_{n=0}^{\infty}$$

Find the associated radius of convergence R.

$R =$

Need Help? Read It Chat About It

2. 2.85/2.85 points | Previous Answers SCalcET7 11.10.008.

Find the Maclaurin series for $f(x)$ using the definition of a Maclaurin series. [Assume that f has a power series expansion. Do not show that $R_n(x) \to 0$.]

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

$$f(x) = \sum_{n=0}^{\infty}$$

Find the associated radius of convergence R.

$R =$

Need Help? Read It Watch It Chat About It

3. 2.85/2.85 points | Previous Answers SCalcET7 11.10.011.

Find the Maclaurin series for $f(x)$ using the definition of a Maclaurin series. [Assume that f has a power series expansion. Do not show that $R_n(x) \to 0$.]

$$f(x) = 6 \sinh 2x$$

$f(x) = \sum_{n=0}^{\infty}$ ✔

Find the associated radius of convergence, R.

$R =$ ✔

Need Help? Read It Watch It Chat About It

---

4. 2.85/2.85 points | Previous Answers SCalcET7 11.10.013.

Find the Taylor series for $f(x)$ centered at the given value of a. [Assume that f has a power series expansion. Do not show that $R_n(x) \to 0$.]

$f(x) = x^4 - 5x^2 + 5, \quad a = 2$

- $\sum_{n=0}^{\infty} \frac{f^{(n)}(2)}{n!}(x-2)^n = -1 + 12(x-2) + 19(x-2)^2 - 8(x-2)^3 + (x-2)^4$
- $\sum_{n=0}^{\infty} \frac{f^{(n)}(2)}{n!}(x-2)^n = 1 + 12(x-2) - 8(x-2)^2 + 19(x-2)^3 - (x-2)^4$
- $\sum_{n=0}^{\infty} \frac{f^{(n)}(2)}{n!}(x-2)^n = -1 - 12(x-2) + 19(x-2)^2 + 8(x-2)^3 + (x-2)^4$
- $\sum_{n=0}^{\infty} \frac{f^{(n)}(2)}{n!}(x-2)^n = 1 + 12(x-2) + 19(x-2)^2 + 8(x-2)^3 + (x-2)^4$
- $\sum_{n=0}^{\infty} \frac{f^{(n)}(2)}{n!}(x-2)^n = 1 + 12(x-2) + 8(x-2)^2 + 19(x-2)^3 + (x-2)^4$

✔

Find the associated radius of convergence R.

$R =$ ✔

Need Help? Read It Chat About It

---

5. 2.85/2.85 points | Previous Answers SCalcET7 11.10.014.

Find the Taylor series for $f(x)$ centered at the given value of a. [Assume that f has a power series expansion. Do not show that $R_n(x) \to 0$.]

$f(x) = 6x - 2x^3, \quad a = -3$

- $\sum_{n=0}^{\infty} \frac{f^{n}(-3)}{n!}(x+3)^n = 36 - 48(x+3) + 18(x+3)^2 - 2(x+3)^3$
- $\sum_{n=0}^{\infty} \frac{f^{n}(-3)}{n!}(x+3)^n = 36 - 48(x+3) + 2(x+3)^2 - 18(x+3)^3$
- $\sum_{n=0}^{\infty} \frac{f^{n}(-3)}{n!}(x+3)^n = 36 + 48(x+3) + 18(x+3)^2 + 2(x+3)^3$
- $\sum_{n=0}^{\infty} \frac{f^{n}(-3)}{n!}(x+3)^n = 36 - 18(x+3) + 48(x+3)^2 - 2(x+3)^3$
- $\sum_{n=0}^{\infty} \frac{f^{n}(-3)}{n!}(x+3)^n = 36 + 48(x+3) + 2(x+3)^2 + 18(x+3)^3$

Find the associated radius of convergence R.

$R =$

Need Help? Read It Chat About It

---

6. 2.85/2.85 points | Previous Answers SCalcET7 11.10.015.

Find the Taylor series for $f(x)$ centered at the given value of a. [Assume that f has a power series expansion. Do not show that $R_n(x) \to 0$.]

$f(x) = \ln x, \quad a = 7$

$$f(x) = \ln 7 + \sum_{n=1}^{\infty}$$

Find the associated radius of convergence R.

$R =$

Need Help? Read It Chat About It

7. 2.9/2.9 points | Previous Answers SCalcET7 11.10.016.MI.

Find the Taylor series for $f(x)$ centered at the given value of a. [Assume that f has a power series expansion. Do not show that $R_n(x) \to 0$.]

$$f(x) = \frac{8}{x}, \quad a = -4$$

$$f(x) = \sum_{n=0}^{\infty}$$

Find the associated radius of convergence R.

$R =$

Need Help? Read It Master It Chat About It