Web**Assign**

Hw 27 (11.9): Functions and Power Series (Homework)

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MA 162 Spring 2012, section 321, Spring 2012
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Current Score : 20 / 20   **Due :** Thursday, March 29 2012 11:55 PM EDT

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1. 2.22/2.22 points | Previous Answers   SCalcET7 11.9.003.MI.

Find a power series representation for the function.

$$f(x) = \frac{1}{7 + x}$$

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

✔

Determine the interval of convergence. (Enter your answer using interval notation.)

✔

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2. 2.22/2.22 points | Previous Answers   SCalcET7 11.9.007.

Find a power series representation for the function.

$$f(x) = \frac{x}{4 + x^2}$$

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

✔

Determine the interval of convergence. (Enter your answer using interval notation.)

✔

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3. 2.22/2.22 points | Previous Answers   SCalcET7 11.9.008.

Find a power series representation for the function.

$$f(x) = \frac{x}{3x^2 + 1}$$

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

Determine the interval of convergence. (Enter your answer using interval notation.)

✔

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4. 2.22/2.22 points | Previous Answers   SCalcET7 11.9.009.

Find a power series representation for the function.

$$f(x) = \frac{5 + x}{1 - x}$$

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

Determine the interval of convergence. (Enter your answer using interval notation.)

✔

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5. 2.22/2.22 points | Previous Answers   SCalcET7 11.9.011.

Express the function as the sum of a power series by first using partial fractions.

$$f(x) = \frac{10}{x^2 - 2x - 24}$$

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

Find the interval of convergence. (Enter your answer using interval notation.)

✔

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6. 2.22/2.22 points | Previous Answers   SCalcET7 11.9.013.

(a) Use differentiation to find a power series representation for

$$f(x) = \frac{1}{(8 + x)^2}.$$

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

What is the radius of convergence, R?

$R = $ [8] ✔

(b) Use part (a) to find a power series for

$$f(x) = \frac{1}{(8 + x)^3}.$$

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

What is the radius of convergence, R?

$R = $ [8] ✔

(c) Use part (b) to find a power series for

$$f(x) = \frac{x^2}{(8 + x)^3}.$$

$$f(x) = \sum_{n=2}^{\infty} \quad \checkmark$$

What is the radius of convergence, R?

$R = $ [8] ✔

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7. 2.22/2.22 points | Previous Answers　　　　　　　　　　　　　　　　　　　SCalcET7 11.9.015.MI.

Find a power series representation for the function.

$$f(x) = \ln(3 - x)$$

$$f(x) = \ln(3) - \sum_{n=1}^{\infty}$$

✔

Determine the radius of convergence, R.

$R = $ [3] ✔

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8. 2.22/2.22 points | Previous Answers   SCalcET7 11.9.025.MI.

Evaluate the indefinite integral as a power series.

$$f(t) = \int \frac{t}{1 - t^{11}} \, dt$$

$$f(t) = C + \sum_{n=0}^{\infty}$$

✔

What is the radius of convergence R?

$R = $ [1] ✔

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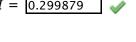**9.** 2.24/2.24 points | Previous Answers   SCalcET7 11.9.029.

Use a power series to approximate the definite integral, I, to six decimal places.

$$\int_0^{0.3} \frac{1}{1 + x^5} \, dx$$

$I = $ [0.299879] ✔

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