Supplementary Homework Exercises for Section 11.9: Calculus with Power Series

Exercises

Answer each of the following questions.

S1. Find a power series representation of the given function and determine the corresponding radius and interval of convergence.

(a) $f(x) = \dfrac{3}{1-x^4}$

(b) $f(x) = \dfrac{x}{9+x^2}$

S2. Find a power series representation of the given function and determine the corresponding radius of convergence (you do *not* need to find the interval of convergence). In most cases, you will need to use differentiation or integration of a power series to obtain your answer.

(a) $f(x) = \dfrac{1}{(1+x)^2}$

(b) $f(x) = \ln(1+x)$

(c) $f(x) = \dfrac{x^3}{(x-2)^2}$

(d) $f(x) = \arctan(x/3)$

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