Supplementary Homework Exercises for Section 11.2: Series (part 1)

Exercises

Answer each of the following questions.

S1. Briefly answer the questions below.

(a) What is the difference between a sequence and a series.

(b) What is a convergent series?

(c) What is a divergent series?

S2. Determine whether each of the following series is convergent or divergent. If the series converges, find its sum.

(a) $\displaystyle\sum_{n=1}^{\infty} \frac{(-3)^{n-1}}{4^n}$

(b) $\displaystyle\sum_{n=1}^{\infty} \frac{e^n}{3^{n-1}}$

(c) $\displaystyle\frac{1}{8} - \frac{1}{4} + \frac{1}{2} - 1 + \cdots$

(d) $\displaystyle\sum_{n=2}^{\infty} \frac{2}{n^2 - 1}$ (*Hint:* Use partial fractions and write as a telescoping series.)

S3. Find the values of x for which the series converges. Also, determine the sum for those values of x.

(a) $\displaystyle\sum_{n=1}^{\infty} \frac{x^n}{3^n}$

(b) $\displaystyle\sum_{n=1}^{\infty} (x-4)^n$

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