Weekly Assignment #9

MAT 229, Spring 2021

Instructions: **Show your work!**

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1. Ratio test (and fall-backs)

a. For which of the following series does the ratio test gives an answer about the series's convergence? For these series, give that answer.

- $\sum\limits_{k=1}^{\infty} \dfrac{2}{k^3+1}$

- $\sum\limits_{k=1}^{\infty} \dfrac{1}{k\,3^k}$

- $\sum\limits_{k=1}^{\infty} \dfrac{(-2)^k}{k^{10}}$

- $\sum\limits_{k=1}^{\infty} \dfrac{k}{1+3\,k}$

b. For any of the series in the first part for which the ratio test was inconclusive, use another test to determine if the series converges or diverges.

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2. Interval of convergence

For each power series, determine the interval of convergence. (Be sure to check endpoints, if there are any.)

a. $\sum\limits_{k=1}^{\infty} (-1)^{k+1}\, \dfrac{x^k}{2^{k-1}\,k}$

b. $\sum\limits_{k=0}^{\infty} (-1)^k\, \dfrac{(3\,x-7)^k}{k!}$