Math 102, Calculus II, Spring 2024, Sec. 3 & 13, HTK
Quiz 2, Thu. & Fri., Feb. 29 & Mar. 1
Show all your work and name any tests you use.

1. It is given that the series $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n^2 + 1}$ is convergent. How many terms of the series must be added to estimate the sum of the series with an error of less than 0.01 ?

It is given that the series $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{(n + 3\sqrt{n})^3}$ is convergent. How many terms of the series must be added to estimate the sum of the series with an error of less than 0.001 ?

2. Determine all values of x at which the series $\sum_{n=0}^{\infty} (n+1)^2 \left(\frac{x}{x+2} \right)^n$ converges absolutely, converges conditionally, or diverges.

Determine all values of x at which the series $\sum_{n=1}^{\infty} \frac{1}{n} \left(1 + \frac{1}{x} \right)^n$ converges absolutely, converges conditionally, or diverges.