1. Rank the series below based on tail thickness. Use \( \ll \) or \( \gg \) notation. Get feedback to see if you are using it correctly.

\[
\sum_{n=2}^{\infty} a_n = \sum_{n=2}^{\infty} \frac{1}{n^4} \\
\sum_{n=2}^{\infty} b_n = \sum_{n=2}^{\infty} \frac{1}{n^{1/2}} \\
\sum_{n=2}^{\infty} c_n = \sum_{n=2}^{\infty} \frac{1}{n \ln n}
\]

2. Is \( \sum a_n \) convergent or divergent? Circle your answer. This should be quick.

3. What do Problems 1 and 2 tell you about convergence or divergence of \( \sum c_n \)? Why?

4. Is \( \sum b_n \) convergent or divergent? Circle your answer. This should be quick.

5. What do Problems 1 and 4 tell you about convergence or divergence of \( \sum c_n \)? Why?
6. Compute the improper integral below. Follow the hint and steps on the last page of the Notes and Learning Goals.
\[
\int_2^\infty \frac{1}{x \ln x} \, dx
\]

Show all work. Instructions for work are posted here. Get feedback on your work. (Something like this could appear on Exam 1.)

7. Is \(\sum_{n=2}^{\infty} \frac{1}{n \ln n}\) convergent or divergent?