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?