You have until the end of class to complete this quiz. Make sure to write your name at the top of the quiz. This quiz is two questions, worth 20 points.

1. Use the limit comparison test to determine whether the following series converges or diverges:

$$\sum_{n=1}^{\infty} \frac{\ln n}{n^3}$$
2. Determine whether each of the following series diverges, converges conditionally, or converges absolutely:

(a) \( \sum_{n=1}^{\infty} (-1)^{n+1} \frac{2n^2}{n^2 - n + 1} \)

(b) \( \sum_{n=1}^{\infty} \sin \left( \frac{n\pi}{2} \right) \frac{1}{n^2} \)