Review

We focus on determining if the series is convergent or not. At this moment, we know

1. The divergence test
2. The integral test
3. The comparison test (very powerful, hard to use)
   1. Limit comparison test (easier to use)
4. The alternating series test (in progress)

Question Which test would you use (or try) for the following series:

\[
\sum_{n=1}^{\infty} \frac{1}{n+0.5} \\
\sum_{n=1}^{\infty} \frac{1 - \sin n}{n^2 + 1} \\
\sum_{n=1}^{\infty} (-1)^{n-1} \frac{1}{n} \\
\sum_{n=1}^{\infty} \frac{1}{n} \\
\sum_{n=1}^{\infty} \frac{1}{n^2} \\
\sum_{n=1}^{\infty} \frac{1}{n^{1.5}}
\]

Today, we will learn the alternating series test, ratio and root tests (both modifications of the comparison test). In addition, we will talk about absolute and conditional convergence, i.e., we compare the convergence of series like

\[
\sum_{n=1}^{\infty} \frac{1}{n} \quad \text{and} \quad \sum_{n=1}^{\infty} (-1)^{n-1} \frac{1}{n} \quad \text{or} \quad \sum_{n=1}^{\infty} \frac{1}{n^2} \quad \text{and} \quad \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n^{2.5}}.
\]