

Problem 1. Determine the value of the telescoping series

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

Problem 2. Does the following sequence converge or diverge? Explain.

$$0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, \dots$$

Problem 3. State the Limit Comparison Test.