1. T / F : For $c \neq 0$, the geometric series $\sum cr^n$ converges if $|r| \leq 1$.

2. T / F : The telescoping series

$$\left(1 - \frac{1}{2}\right) + \left(\frac{1}{2} - \frac{1}{3}\right) + \left(\frac{1}{3} - \frac{1}{4}\right) + \left(\frac{1}{4} - \frac{1}{5}\right) + \left(\frac{1}{5} - \frac{1}{6}\right) + \cdots$$

covers to 1.

3. T / F : The telescoping series

$$\left(\ln 1 - \ln \frac{1}{2}\right) + \left(\ln \frac{1}{2} - \ln \frac{1}{3}\right) + \left(\ln \frac{1}{3} - \ln \frac{1}{4}\right) + \left(\ln \frac{1}{4} - \ln \frac{1}{5}\right) + \left(\ln \frac{1}{5} - \ln \frac{1}{6}\right) + \cdots$$

converges to $\ln 1 = 0$.

4. T / F : The geometric series

$$1 + \frac{5}{2} + \frac{25}{4} + \frac{125}{8} + \frac{625}{16} + \cdots$$

converges to $\frac{1}{1 - \frac{5}{2}}$.

5. T / F : The geometric series

$$1 - \frac{2}{5} + \frac{4}{25} - \frac{8}{125} + \frac{16}{625} - \cdots$$

converges to $\frac{1}{1 + \frac{2}{5}}$.

6. T / F : If $a_n \to 0$ as $n \to \infty$, the sequence $\{a_n\}$ converges.

7. T / F : If $a_n \to 0$ as $n \to \infty$, the series $\sum a_n$ converges.

8. T / F : If $a_n \to 2$ as $n \to \infty$, the sequence $\{a_n\}$ converges.

9. T / F : If $a_n \to 2$ as $n \to \infty$, the series $\sum a_n$ converges.

10. T / F : The Harmonic series

$$\sum_{n=1}^{\infty} \frac{1}{n} = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \cdots$$

converges.