1. Define an alternating series and state the alternating series test.

2. Let \( s = \sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{2n - 1} \).

   (a) Write out the first 6 terms of this series as fractions and the first 6 partial sums of this series as decimals rounded to 4 decimal places.

   (b) Explain why \( s \) converges using the alternating series test.

   (c) Let \( s_n \) be the \( n \)th partial sum in this series. Use the error estimate for the partial sums of an alternating series to carry out the following two tasks:

      (i) Give a bound from above on \( |s - s_{100}| \), as a decimal rounded to four digits after the decimal point.

      (ii) Find an \( n \) for which \( |s - s_n| \leq 1/100 \).

3. T/F (with justification)

   The infinite series \( \sum_{n=1}^{\infty} \frac{\cos n}{n} \) is alternating.