

Name:

Section: 11 12 13

1. Find the first four terms of the n -th partial sums $\{s_n\}$ for the series $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{1}{n}$.

2. Find the sum of the following series

(a) $\sum_{n=1}^{\infty} 2^n 5^{1-n}$

(b) $\sum_{n=1}^{\infty} \left(\frac{2}{\sqrt{n}} - \frac{2}{\sqrt{n+1}} \right)$

3. Determine if the following series converge or diverge. You may only use techniques of geometric series, telescoping series, the divergence test, p -series, and the integral test.

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

(b)
$$\sum_{n=1}^{\infty} \frac{2}{n^{3/2}}$$

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

(d)
$$\sum_{n=0}^{\infty} \left(\frac{\pi}{3}\right)^n$$