

1. For the following 3 infinite series, determine a) if it converges, and if it does, show how you can know this, ELSE b) if it does NOT converge (aka, it "diverges"), prove that it diverges.

(a)  $\sum_{n=1}^{\infty} \frac{1}{n}$ .

(b)  $6 \sum_{n=1}^{\infty} (-1)^{n+1} \frac{1}{n}$ .

(c) For  $|\frac{1}{a}| < 1$ ,  $\sum_{n=1}^{\infty} (\frac{1}{a})^n$ .