In class today we examined three results

A. A Geometric Series: \[ \sum_{k=0}^{\infty} a \cdot r^k = a + a \cdot r + a \cdot r^2 + a \cdot r^3 + \ldots \] converges to \( \frac{a}{1-r} \) provided \(-1 < r < 1\)

B. The Harmonic Series \[ \sum_{k=1}^{\infty} \frac{1}{k} = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \ldots \] diverges

C. \( \sqrt{2} \) is irrational

These are all important results so to make sure you understand how we arrived at them, write up the proofs of or arguments for each. Your work should be clear, concise, complete and correct. You must show me that you understand how each result is proved and that you can clearly communicate it to me.

Please attach this assignment sheet to your work when you hand it in.