Elementary analysis

[Science](), [Mathematics]()

Elementary Analysis Question So the series converges Question 2 Supposing that all values of n, this is weaker than the result in a, the full conclusion will follow by complete adaptation of the proof. Assuming the represents the partial figure of and represents the partial summation of , so

From the hypothesis that for all values of n, we know for all values of n

2b)

Supposing that converges, meaning from the definition that as . The sequence of is positive and monotonically rising because for all values of and so the series has a limit by Monotone Convergence Theorem. This shows that the sequence converges.

2c)

Supposing diverges. Because are negative terms, the only way that diverges is when approaches as approaches also. Therefore, the larger sum must also approach as approaches, so the also diverges.

2d)

The series is expected to diverge, this is because the numerator is and the denominator is behaving like, but the inequality is opposite. Therefore, when we give up a portion of the denominator, the desired conclusion becomes

Question 3

3a)

As it has been demonstrated in the first question, the series tends to converge as in

3b)

From the equation it can be shown that for a sufficiently larger value of n.

We could have given a small bound but ¼ is quite sufficient. Therefore, because the equation is a convergence p-series, it definitely converges by comparison test.

3c

From the equation it can be demonstrated. This normally applies to sufficiently larger values of n, giving it a smaller bound of are a little bit sufficient. Therefore,

The equation is a convergence p-series, thereby converging by comparison test.

Reference

Connor, M. J.. Fort Irwin housing comparison test. Champaign, Ill.: Construction Engineering Research Laboratory, U. S. Army, Corps of Engineers ;, 1983. Print.