Group Project Worksheet
Math 21-123
Due on Jan 31 in class

Group Members: _____

1. Give an example of two divergent sequences such that both their sum and product converges.

2. What do you mean by mathematical induction?

3. Use Mathematical induction to show that the sequence given by $a_1 = 1, a_{n+1} = 1+\sqrt{a_n}$ is monotonically increasing and bounded above by 3. Note that by monotonic sequence theorem, the above sequence converges. Thus, find the limit.

4. Show that the harmonic series $\sum_{n=1}^{\infty} \frac{1}{n}$ diverges. (Read Page 424 of the text)

5. Find the sum of the series $\sum_{k=1}^{\infty} \frac{1}{(k+1)(k+3)}$.