Seminar 4

Sequences, convergence, monotonicity.

1. Prove that the $\langle \frac{n}{n+1} \rangle$ sequence is bounded, strictly monotonically increasing and convergent.

2. Prove that the $\langle \frac{(-1)^{n+1}}{n+1} \rangle$ sequence is bounded, non monotonic and convergent.

3. Prove that the $\langle \frac{1}{n!} \rangle$ sequence is bounded, strictly monotonically decreasing and convergent.

4. Prove that the $\langle (-1)^n n \rangle$ sequence is unbounded, non monotonic and diverges.

5. Prove that $\lim\limits_{n \to \infty} \dfrac{3n+1}{-2n+3} = -\dfrac{3}{2}$.