National University of Computer and Emerging Sciences

Instructors: Dr. Imran Shehzad, Ahtsham ul Haq **MT1003 Calculus and Analytical Geometry**

Homework 10

Q No. 01: Determine whether the series converges or diverges? Give reason for your answers.

$$\sum_{n=0}^{\infty}\left(\frac{5}{2^n}-\frac{1}{3^n}\right)$$

Q No. 02: Find a formula for the nth partial sum of the series and use it to determine if the series converges or diverges. If a series converges, find its sum.

$$\sum_{n=1}^{\infty}\left(\frac{3}{n^2}-\frac{3}{(n+1)^2}\right)$$

Q No. 03: Determine whether the sequence converges or diverges? Find the limit if it converges.

$$a_n=\left(\frac{3n+1}{3n-1}\right)^n$$