King Saud University
Department of Mathematics
M-203
(Differential & Integral Calculus)
First Mid-Term Examination
Summer Term (1436)

Max. Marks: 25 Time: 90 minutes

Marks: Q.1[4]; Q.2[5]; Q.3[5]; Q.4[6]; Q.5[5]

Q.No: 1 Determine whether or not the sequence $\left\{\frac{n^2}{2n-1}-\frac{n^2}{2n+1}\right\}_{n=1}^{\infty}$ converges, and if it Converges, find its limit.

Q. No: 2 Find the **sum** of the series $\sum_{n=1}^{\infty}\left[\frac{9}{(3n-1)(3n+2)}\right]$.

Q. N0: 3 Determine whether the following series is **absolutely convergent, conditionally convergent** or **divergent** $\sum_{n=1}^{\infty}\frac{(-1)^n}{\ln(n+1)}$.

Q.No: 4 Find the interval of convergence and the radius of convergence of the power series: $\sum_{n=0}^{\infty}(-3)^n\frac{x^n}{\sqrt{n+1}}$.

Q. N0: 5 Find the first three non-zero terms of a Taylor series for f(x) = x^2e^x at $c=-1$.