MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

TEST 2 **MATHEMATICS 2000** OCTOBER 25TH, 2004

Name	**MUN Number**

[5] 1. Use the Integral Test to determine the convergence or divergence of $\sum_{n=1}^{\infty} \frac{n}{2n^2+1}$. Remember to show that the series meets the requirements of the Integral Test.

[20] 2. Use an appropriate test to determine the convergence or divergence of each of the following series. **DO 4 OUT OF THE 5 PARTS.**

(a) $\sum_{n=1}^{\infty} \frac{1 \cdot 3 \cdot 5 \cdots (2n-1)}{n!}$

(b) $\sum^{\infty} \frac{n-7}{}$

(c) $\displaystyle\sum_{n=0}^{\infty} \frac{4^n}{3^n + 5^n}$

(d) $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n}{[\arctan(n)]^n}$

(e) $\displaystyle\sum_{n=1}^{\infty} \frac{3n - 1}{\sqrt{n^4 + n}}$

[7] 3. Determine whether $\sum_{n=1}^{\infty} \frac{(-1)^n \sqrt{n}}{n+1}$ is absolutely convergent, conditionally convergent, or divergent.

[8] 4. Find the radius and interval of convergence of the power series $\sum_{n=0}^{\infty} \frac{(x-2)^n}{(n+3)6^n}$.