MATH 151 Exam 3 Review Spring

1. Find the **sum** of $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n(n+3)}$

2. Determine whether the series is conditionally convergent, absolutely convergent or divergent.

   $$\sum_{n=1}^{\infty} (-1)^{n-1}\, n^{-1/3}$$

3. Test the series for convergence or divergence

   (a) $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n\sqrt{ln\ n}}$

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

4. Test the following for absolute convergence, conditional convergence or divergence.

   (a) $\displaystyle\sum_{n=1}^{\infty} \frac{n-1}{n^2+n}$

   (b) $\displaystyle\sum_{n=1}^{\infty} (-1)^{n-1}\, \frac{n-1}{n^2+n}$

   (c) $\displaystyle\sum_{n=1}^{\infty} \frac{(3n)^n}{(1+8n)^n}$

   (d) $\displaystyle\sum_{n=1}^{\infty} n^2 e^{-n^3}$

   (e) $\displaystyle\sum_{k=1}^{\infty} \frac{2^k k!}{(k+2)!}$

   (f) $\displaystyle\sum_{n=1}^{\infty} (-1)^n\, \frac{n}{n^2+25}$

   (g) $\displaystyle\sum_{n=1}^{\infty} sin\ n$

   (h) $\displaystyle\sum_{n=1}^{\infty} \frac{n^2+1}{n^3+1}$

   (i) $\displaystyle\sum_{n=2}^{\infty} \frac{(-1)^{n-1}}{\sqrt{n}-1}$

   (j) $\displaystyle\sum_{k=1}^{\infty} \frac{k+5}{5^k}$