SI Session: Exam III Review
Monday, August 11th
12:35 PM – 2:35PM
Room 1229

Prof. Stockton : Calculus II
Summer II 2008
SI Leader : Neil Jody

[1] Determine if each of the following *sequences* converges or diverges. If it converges, indicate the limit.

(a) $a_n = \dfrac{n}{\ln n}$

(b) $a_n = \dfrac{(-1)^n}{n^2 + 2n}$

(c) $a_n = (-1)^n \sqrt[n]{n}$

(d) $a_n = \dfrac{\sqrt{2n^2 + 1}}{3n + 2}$

[2] Find the sum of the following convergent series: $\sum_{n=1}^{\infty} \frac{(-1)^n 2^{n+1}}{5^n}$

[3] Determine if each series converges or diverges. Indicate the convergence tests used.

(a) $\sum_{n=1}^{\infty} \frac{2n+3}{\sqrt{5n^2+1}}$

(b) $\sum_{n=1}^{\infty} \frac{(2n)!}{n3^{n+1}}$

(c) $\sum_{n=2}^{\infty} \frac{1}{n(\ln n)^{3/2}}$

(d) $\sum_{n=1}^{\infty} \frac{n+3^n}{4^n}$

[4] Determine if each series is *absolutely* convergent, *conditionally* convergent, or divergent. Indicate the convergence tests used.

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

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

(c) $\sum_{n=1}^{\infty}(-1)^n \frac{n^2+3}{2n^4+3n+1}$

(d) $\sum_{n=0}^{\infty}\frac{\cos^n n}{(n+2)^n}$

[5] Determine the *radius* of convergence for each of the following power series.

(a) $\sum_{n=0}^{\infty} \frac{2^n (x-1)^n}{n!}$

(b) $\sum_{n=1}^{\infty} n^n x^n$

[6] Find the *interval* of convergence of the following power series.

(a) $\sum_{n=1}^{\infty} \frac{1}{n}(x+1)^n$

(b) $\sum_{n=0}^{\infty} \frac{n!}{(2n)!}(x+1)^n$

[7] Let $f(x)=\sum_{n=1}^{\infty}\frac{2^n}{n}(x-1)^n$. Find: (a) $f'(x)$, (b) $\int f(x)\,dx$, (c) the intervals of convergence for $f'(x)$, $f(x)$, and $\int f(x)\,dx$.