SI Session: Week of March 31st
Tuesdays 5:30 – 7:30 PM, Rm. 1130
Wednesdays 4:20 – 6:20 PM. Rm. 1229

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

Write the first five terms of the sequence.

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

Write an expression for the *n*th term of the sequence.

1. $3, -\frac{3}{2}, \frac{3}{4}, -\frac{3}{8}, \ldots$

2. $\frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \ldots$

3. $\frac{1}{2\cdot 3}, \frac{2}{3\cdot 4}, \frac{3}{4\cdot 5}, \frac{4}{5\cdot 6}, \ldots$

Simplify the ratio of factorials.

1. $\frac{10!}{8!}$

2. $\frac{25!}{23!}$

3. $\frac{(n+2)!}{n!}$

4. $\frac{(2n-1)!}{(2n+1)!}$

5. $\frac{(2n+2)!}{(2n)!}$

Determine the convergence or divergence of the sequence with the given *n*th tern. If the sequence converges find its limit.

1. $a_n = \dfrac{3n^2 - n + 4}{2n^2 + 1}$

2. $a_n = \dfrac{\ln\left(n^3\right)}{2n}$

3. $a_n = \dfrac{(n+1)!}{n!}$

4. $a_n = \left(1 + \dfrac{k}{n}\right)^n$

Find the first five terms of the sequence of partial sums.

1. $3-\frac{9}{2}+\frac{27}{4}-\frac{81}{8}+\frac{243}{16}-\ldots$

Verify that the infinite series diverges.

1. $\sum_{n=1}^{\infty}\frac{n}{n+1}$

2. $\sum_{n=1}^{\infty}\frac{2^n+1}{2^{n+1}}$

Find the sum of the convergent series.

1. $\sum_{n=1}^{\infty} \frac{8}{(n+1)(n+2)}$

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

3. $3-1+\frac{1}{3}-\frac{1}{9}+\ldots$

(a) Write the repeating decimal as a geometric series. (b) Write its sum as the ratio of two integers.

1. $0.0\overline{75}$

Determine the convergence or divergence of the series.

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

2. $\sum_{n=0}^{\infty}\frac{4}{2^n}$

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