



1. (10 pts – 5 pts each) Which of the following sequences converge and which diverge?

a) $a_n = 6 + (0.2)^n$

b) $a_n = \frac{-\sin(n)}{5^n}$

2. (20 pts – 10 pts each) Find the sum of the following series whenever it is possible.

a) $\sum_0^{\infty} \frac{(-1)^n}{7^n}$

b) $\sum_1^{\infty} \frac{1}{(3n-2)(3n+1)}$

3. (50 pts – 10 pts each) Determine whether each of the following series converge or diverge.

a) $\sum_1^{\infty} \left(\frac{6n+4}{6n-4} \right)^n$

b) $\sum_1^{\infty} \frac{2e^{3n}}{1+e^{6n}}$

c) $\sum_3^{\infty} \frac{\ln n}{n+6}$

d) $\sum_1^{\infty} \frac{1+n!}{(1+n)!}$

e) $\sum_3^{\infty} \frac{1}{n \ln n \sqrt{\ln(\ln n)}}$

4. (20 pts – 10 pts each) Test the following Alternating Series; if convergent state whether Conditionally or Absolutely.

a) $\sum_1^{\infty} (\cos \pi) \left(\frac{n}{n^2+4} \right)$

b) $\sum (-1)^n [\sqrt{n+1} - \sqrt{n}]$