

Math 21C DHC
Kouba
Discussion Sheet 6

1.) Follow the suggestions for testing each of the following series for convergence or divergence.

a.) $\sum_{n=0}^{\infty} 2(-3/4)^{n+1}$ (Use the geometric series test and find the sum if the series converges.)

b.) $\sum_{n=6}^{\infty} \left(\frac{1}{\sqrt{n+3}} - \frac{1}{\sqrt{n+4}} \right)$ (Use the sequence of partial sums test.)

c.) $\sum_{n=1}^{\infty} \frac{1}{n^2 + 3n + 2}$ (Use partial fractions and the sequence of partial sums test.)

d.) $\sum_{n=1}^{\infty} \frac{n}{e^n}$ (Use the integral test.)

e.) $\sum_{n=1}^{\infty} \frac{1}{n!}$ (Use the comparison test.)

f.) $\sum_{n=2}^{\infty} \frac{n+3}{n^2 + 3n + 3}$ (Use the limit comparison test.)

g.) $\sum_{n=2}^{\infty} \frac{1}{n \ln n}$ (Use the integral test.)

h.) $\sum_{n=2}^{\infty} \frac{1}{n^2 \ln n}$ (Use the limit comparison test.)

2.) Determine the value of the following convergent series :

$$24 - 12 + 6 - 3 + 3/2 - 3/4 + \dots$$

3.) The series $\sum_{n=1}^{\infty} \frac{1}{n}$ diverges. Estimate the sum of the first 2,000,000 terms of this series.

(Use (*) from class handout.)