

Math 143 Set 6

1. Do the following series converge or diverge? State which test you used.

[illegible]

b. $\sum_{n=1}^{\infty} \frac{n^2 - 1}{3n^4 + 1}$

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

d. $\sum_{n=1}^{\infty} \frac{100^n}{n!}$

e. $\sum_{n=0}^{\infty} \frac{2n}{\sqrt{n+1}}$

f. $\sum_{n=0}^{\infty} \frac{(n!)^n}{n^{4n}}$

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

h. $\sum_{n=0}^{\infty} n^2 e^{-n}$

i. $\sum_{n=0}^{\infty} \frac{(n!)^2}{2^{n^2}}$

j. $\sum_{n=1}^{\infty} \frac{n^4 + n^6}{n^8}$

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

- $\sum_{n=1}^{\infty} \frac{1}{\sqrt{n}}$

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

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

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

p. $\sum_{n=1}^{\infty} \frac{(-1)^n 5^n}{4^n}$

[illegible]

r. $\sum_{n=1}^{\infty} (-1)^n n^n$

s. $\sum_{n=1}^{\infty} (-1)^n$

2. Approximate the sum of each of the following alternating series to within $1/100$ of the true value. You may leave your answer as a sum of fractions.

a. $\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n!}}$.

b. $\sum_{n=1}^{\infty} \frac{(-1)^n}{n}$.

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