Math 8
Homework Set #7
Convergence Test Practice

Practice Problems

Use any of the convergence tests we have learned in class to determine if the following series converge or diverge.

1) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{2^n} + \frac{1}{3^n}$

2) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^3} + \left(\frac{5}{4}\right)^n$

3) $\displaystyle\sum_{n=1}^{\infty} \frac{1}{2^n + 3^n}$

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

5) $\displaystyle\sum_{n=1}^{\infty} \frac{n^n}{3^n n!}$

6) $\displaystyle\sum_{n=1}^{\infty} \frac{4n^3 + 5}{7n^2 - 11n^3}$

7) $\displaystyle\sum_{n=1}^{\infty} (-1)^n \cos\left(\frac{n\pi}{2(n+1)}\right)$

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

9) $\displaystyle\sum_{n=1}^{\infty} \frac{3 + \cos n}{e^n}$

10) $\displaystyle\sum_{n=2}^{\infty} \frac{1}{n\sqrt{\ln n}}$

11) $\displaystyle\sum_{n=1}^{\infty} (-1)^n n^2 e^{-n}$

12) $\displaystyle\sum_{n=1}^{\infty} \frac{n \ln n}{(1+n)^3}$

13) $\displaystyle\sum_{n=1}^{\infty} \frac{\sin 3n}{1 + 2^n}$

14) $\displaystyle\sum_{n=1}^{\infty} \left(\sqrt[n]{2} - 1\right)^n$

15) $\displaystyle\sum_{n=1}^{\infty} n\left(e^{1/n} - 1\right)$

16) $\displaystyle\sum_{n=1}^{\infty} (-1)^n \frac{\sqrt{n}}{n+2}$

17) $\displaystyle\sum_{n=1}^{\infty} \sqrt[n]{2} - 1$