

136.271 Assignment 2

Due Monday, ~~January 26~~, 2004, in class

1. Use the integral test, the (simple) comparison test, the limit comparison test or the rest of the theory we have covered so far (first 4 sections) to check if the following series converges or diverges. (If you want to use the integral test, then you first need to show it is applicable.)

(a) $5 + \frac{2}{3} + 1 + \frac{1}{7} + \frac{1}{2} + \frac{1}{3!} + \frac{1}{4!} + \frac{1}{5!} + \frac{1}{6!} \dots$

(b) $\sum_{n=2}^{\infty} \frac{\ln n}{\sqrt{2n}}$

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

(d) $\sum_{n=1}^{\infty} \frac{(\ln n)^2}{n^{2/3}}$

(e) $\sum_{n=2}^{\infty} \frac{(1/n)}{(\ln n)\sqrt{(\ln^2 n) - 1}}$

(f) $\sum_{n=1}^{\infty} \frac{1}{1 + \ln n}$

$n = 3$

2. Show that if $\sum_{n=1}^{\infty} a_n$ is a positive convergent series, then so is the series $\sum_{n=1}^{\infty} \frac{a_n}{n}$.