MATH 2730 Assignment 2

Due February 15, 2008, 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 a test, then you first need to show it is applicable.)

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

(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) $\sum_{n=3}^{\infty}\frac{\left(1/n\right)}{(\ln n)\sqrt{(\ln^2 n)-1}}$

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

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