For the week of October 20-24

1) Show that the series $\sum_{n=3}^{\infty} \frac{1}{n^3}$ converges to a number less than $\frac{1}{2}$. (Hint: compare this sum to a suitable improper integral)

2) Use the integral test to determine whether the following series converge.

   (a) $\sum_{n=1}^{\infty} \frac{1}{(n+4)^2}$

   (b) $\sum_{n=1}^{\infty} \frac{5}{e^n}$

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

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

3) Compare the following series to a $p-$series $\sum_{n=1}^{\infty} \frac{1}{n^p}$ to predict whether