Part I: (due at the beginning of class Wednesday, April 3)

Try out Example 1 on the yellow/white Comparison Tests handout and read Theorem 1 on that handout.

Remember that what you turn in for Part I should have 3 parts, as mentioned in the syllabus:

(a) Your responses to the reading questions.

(b) Your own questions/comments on the reading/anything else we've been doing in class.

(c) The amount of time you spent on Part I (including the time spent reading/watching).

Part II: Exercises

No Part II this time. Have a great break!

Part III: Homework Problems (due Wednesday, April 3 at the beginning of class)

1. As mentioned in class, $\sum_{n=1}^{\infty} \frac{1}{n^2} = \frac{\pi^2}{6}$. Leonhard Euler (pronounced "Oiler") first discovered this (though his proof was not valid at first, he did several valid proofs later), and he then later showed that $\sum_{n=1}^{\infty} \frac{1}{n^4} = \frac{\pi^4}{90}$. Use these two results to find the sum of each of the following.

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

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

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

   (d) $\sum_{n=2}^{\infty} \left(\frac{3}{n}\right)^4$

   (e) $\sum_{n=5}^{\infty} \frac{1}{(n-2)^4}$

2. Use the integral test to determine if the series converges or diverges. Make sure you explain why the series satisfies the hypotheses of the Integral Test.

   (a) $\sum_{n=0}^{\infty} e^{-n}$

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

mini-Celebration of Learning Wednesday, March 27

The mini-Celebration of Learning may have problems on geometric series, telescoping series, series and their sequences of partial sums, or the nth Term Test for Divergence.