# Math 100 - Week 7 Recitation (Fall 2013)

The purpose of this week's activity is to reinforce the difference between sequences and series. For each of the following expressions $a_n$, your goal is to

(a) Determine whether the **sequence** $\{a_n\}$ converges or diverges.

(b) If the sequence converges, find its **limit**.

(c) Determine whether the **series** $\sum_{n=1}^{\infty} a_n$ converges or diverges.

(d) If the series converges, find its **sum**.

At the end of the recitation session, as a sample of your work, each group will be asked to submit solutions (all four parts) to three of the problems on the worksheet; you may choose any three. These problems will be graded to determine recitation grades for all the group's members. Remember, as always, that these solutions should be a consensus, agreed on by all members of your group.

(Note: The square brackets in Problems 4, 5, and 8 are no different from parentheses... they're just there to make some of the complicated formulas more easily readable.)

1.
$$a_n = \frac{2^{2n} + 3^n}{5^{n-1}}$$

2.
$$a_n = \frac{2^n + 3^{2n}}{5^{n+1}}$$

3.
$$a_n = \frac{4e^n + n^2}{9e^n + 2n}$$

4.
$$a_n = [n^3 + 1]^{-1/3} - [(n+2)^3 + 1]^{-1/3}$$

5.
$$a_n = [n^3 + 1]^{1/3} - [(n+2)^3 + 1]^{1/3}$$

6.
$$a_n = (2^n + 1)e^{-n}$$

7.
$$a_n = (4^n + 1)\pi^{-n}$$

8.
$$a_n = \ln[n(n+2)] - \ln[(n+1)^2]$$