

# Math 1b. Series—The Integral and Comparison Tests; Estimating Sums (Comparison Tests)

Spring 2006

1. Determine the convergence of the series

$$\sum_{n=1}^{\infty} \frac{n^2 - 1}{3n^4 + 1}.$$

2. Determine the convergence of the series

$$\sum_{n=1}^{\infty} \frac{n^2 - 1}{3n^4 + 1}.$$

3. Determine the convergence of the series

$$\sum_{n=1}^{\infty} \frac{4 + 3^n}{2^n}.$$

4. Determine the convergence of the series

$$\sum_{n=1}^{\infty} \frac{1 + \sin n}{10^n}.$$

5. Estimate the series

$$\sum_{n=1}^{\infty} \frac{1}{n^{3/2}}$$

to within 0.01.

6. If we estimate  $\sum_{n=1}^{\infty} 1/n^{3/2}$  by

$$\sum_{n=1}^{10} \frac{1}{n^{3/2}},$$

how accurate is our estimate?