

Math 1B Discussion Section Problems

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You should work on the following problems in groups of 3 or 4. Try to get through as many as you can, but you aren't expected to finish everything. Instead, you should make sure everyone in your group knows **how** to solve all the problems and not just the answers.

1. Determine whether each of the following series converge or diverge. DO NOT use the series comparison test.

(a) $\sum_{n=1}^{\infty} \frac{3\sqrt{n}}{n}$

(b) $1 + \frac{1}{16} + \frac{1}{81} + \frac{1}{256} + \dots$

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

(d) $\sum_{n=1}^{\infty} ne^{-n}$

(e) $\sum_{n=1}^{\infty} \frac{x^2}{9 + x^6}$

(f) $\sum_{n=3}^{\infty} \frac{1}{n(\ln n)\sqrt{\ln \ln n}}$

2. For which values of x does $\sum_{n=1}^{\infty} (\ln x)^n$ converge? And for $\sum_{n=1}^{\infty} (\ln n)^x$?

3. True/False, give a counterexample if false: The integral test works even if f is not decreasing.