

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Clear your desk of everything except pens, pencils and erasers. **Show all your work.**

If you have a question raise your hand and I will come to you.

1. Judged by the limit comparison test, does  $\sum_{n=1}^{\infty} \frac{\ln n}{n^{3/2}}$  converge? Give reasons for your our answer (total 4 points).

Answer: Converges

(2 points for the limit comparison test using  $\sum_{n=1}^{\infty} \frac{1}{n^{5/4}}$  or something else appropriate, and 2 points for the correct final answer.)

2. Does  $\sum_{n=2}^{\infty} (-1)^{n+1} \frac{\ln n}{n}$  converge? Give reasons for your our answer (total 3 points).

Answer: Converges

(2 points for the appropriate alternating series test; and 1 point for the correct final answer.)

3. Judged by the root test, does  $\sum_{n=1}^{\infty} \frac{n^2}{2^n}$  converge? Give reasons for your our answer (total 3 points).

Answer: Converges

(2 points for root test details ( $\rho = 1/2 < 1$ ); and 1 point for the correct final answer.)