

Instructions: Work the problems below as directed. Show all work. Clearly mark your final answers. Use exact values unless the problem specifically directs you to round. Simplify as much as possible. Partial credit is possible, but solutions without work will not receive full credit.

1. Use the integral test or the p-series test to determine if the series converges. State which one you used.

a.
$$\sum_{n=1}^{\infty} \frac{3}{n^{5/3}}$$

b.
$$\sum_{n=1}^{\infty} \frac{1}{n\sqrt{\ln n}}$$

2. Use the direct comparison test or the limit comparison test to determine if the series converges or diverges. State which one you used.

a.
$$\sum_{n=1}^{\infty} \frac{3^n}{4^n + 5}$$

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