

Show all work on this sheet, including indications of mental steps, in a clearly organized way that speaks for itself. Use proper mathematical notation/syntax. Label parts, box final short answers.

Test each infinite series $\sum_{n=i}^{\infty} a_n$ for convergence or divergence, supporting your claim. Be convincing. Don't waste time.

$$(13) \sum_{n=2}^{\infty} \frac{2}{n(\ln n)^3}$$

$$[\text{Note: } \int \frac{2}{n(\ln n)^3} dn = -\frac{1}{(\ln n)^2} + C]$$

$$(23) \sum_{n=1}^{\infty} (-1)^n 2^{\frac{1}{n}}$$

$$(15) \sum_{n=1}^{\infty} \frac{3^n n^2}{n!}$$

$$(33) \sum_{n=1}^{\infty} \frac{\tan^{-1} n}{n\sqrt{n}}$$