

Ratio and Root Tests Worksheet

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1 Exercises

Use the root or ratio test to determine the convergence/divergence of the following series.

I. $\sum_{k=1}^{\infty} \frac{1}{k!}$

II. $\sum_{k=1}^{\infty} \frac{k^k}{k!}$

III. $\sum_{k=1}^{\infty} \frac{(2k)!}{4^k}$

IV. $\sum_{k=1}^{\infty} \frac{1}{2k-1}$

V. $\sum_{k=1}^{\infty} \frac{k}{2^k}$

VI. $\sum_{k=1}^{\infty} \left(\frac{4k-3}{2k+1} \right)^k$

VII. $\sum_{k=1}^{\infty} \left(\frac{1}{\ln(k+1)} \right)^k$