

Exercise 421

1. Does the sequence $\{\frac{n^2}{2^{n-1}}\}$ converge or diverge? (G). (answer Converges or Diverges)

2. Evaluate the series $\sum_{n=2}^{\infty} [\frac{1}{n^2-1} + (\frac{1}{2})^{n-1}] = \underline{\text{(H)}}$.

3. Which of the following series is divergent? (I). (Ans: a? b? c?)

(a) $\sum_{k=1}^{\infty} \frac{e^{2k}}{k^k}$ (b) $\sum_{k=1}^{\infty} \frac{1}{\sqrt[3]{k}}$ (c) $\sum_{k=0}^{\infty} \frac{(-1)^k}{k+1}$.

4. Which of the following series converge absolutely? (J) (Ans: a? b? c?)

(a) $\sum_{k=2}^{\infty} \frac{(-1)^k}{k \ln k}$ (b) $\sum_{k=1}^{\infty} \frac{(-1)^{k+1}}{\sqrt{k}}$ (c) $\sum_{k=1}^{\infty} \frac{\cos \pi k}{k^2}$.

5. Does $\int_{-1}^1 \frac{1}{x} dx$ converge or diverge? Show your answer.

B 、 Computations : (Total 60%, 6 points each, Show all your work, NO DETAIL WORK, NO POINTS!!)

<p>1. Determine the convergence or divergence of</p> $\sum_{n=2}^{\infty} \frac{\ln n}{n^2}$	<p>2. Determine the convergence or divergence of</p> $\sum_{n=1}^{\infty} \frac{\sqrt[3]{n}}{n^2 + 1}$
<p>3. Does the series $\sum_{n=1}^{\infty} \frac{(-1)^n}{\ln(n+1)}$ converge absolutely? Converge conditionally or diverges? Prove your answer.</p>	<p>4. Determine the convergence or divergence of</p> $\sum_{n=1}^{\infty} \frac{n^2 2^{n+1}}{3^n}$