

DETERMINE THE CONVERGENCE OR DIVERGENCE OF EACH SERIES.

(i) STATE **THE NAME** OF THE TEST YOU USE

(ii) IF A **CONVERGENT** SERIES IS **GEOMETRIC OR TELESOPING**, FIND THE SUM OF THE SERIES.

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

2. $\sum_{n=1}^{\infty} \frac{5n - 3}{n^3 + n - 6}$

3. $\sum_{n=0}^{\infty} 9 \left(\frac{5}{3} \right)^n$

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

5. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n!}{[1 \cdot 3 \cdot 5 \cdot \dots \cdot (2n-1)]}$

6. $\sum_{n=0}^{\infty} 4(-.22)^n$

7. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n^2}{n - 6}$

8. $\sum_{n=1}^{\infty} \frac{n \cdot 3^n}{n!}$

9. $\sum_{n=0}^{\infty} \pi(e - 2)^n$

10. $\sum_{n=1}^{\infty} \frac{n^k}{n^{k+1} + 1}$

HINT: APPLY LIMIT COMPARISON

TEST USING THE p-SERIES $\sum_{n=1}^{\infty} \frac{n^k}{n^{k+1}}$

(SIMPLIFIED, OF COURSE).

11. $\sum_{n=1}^{\infty} \left(\frac{n}{n+2} - \frac{n+1}{n+3} \right)$