

Math 122 - #23
Ratio Test / Root Test

In the following problems, use the Ratio or Root test to determine if the series converges or diverges.

1. $\sum_{n=1}^{\infty} \frac{n^2}{e^n}$

2. $\sum_{n=1}^{\infty} \frac{n^3}{(\ln 2)^n}$

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

4. $\sum_{n=1}^{\infty} \frac{e^n}{n!}$

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

6. $\sum_{n=1}^{\infty} \frac{e^n}{n^3}$

7. $\sum_{n=1}^{\infty} \frac{n!}{3n! - 1}$

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

9. $\sum_{n=1}^{\infty} \frac{n!}{n^n}$

10. $\sum_{n=1}^{\infty} \left(\frac{2n}{5n-1} \right)^n$

11. $\sum_{n=2}^{\infty} \frac{1}{(\ln n)^n}$

Answers

1. Converges
2. Diverges
3. Converges
4. Converges
5. Converges
6. Diverges
7. Diverges
8. Converges
9. Converges
10. Converges
11. Converges