

Math 122
Quiz 8 Review

Determine if the following series converge or diverge.

1. $\sum_{n=1}^{\infty} \frac{1}{5n+1}$

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

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

4. $\sum_{n=1}^{\infty} ne^{-n^2}$

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

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

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

8. $\sum_{n=1}^{\infty} \frac{1}{n^2} \cos\left(\frac{1}{n}\right)$

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

10. $\sum_{n=1}^{\infty} \frac{1}{2\sqrt{n} + \sqrt[3]{n}}$

11. $\sum_{n=1}^{\infty} \frac{1 + \cos n}{n^2}$

12. $\sum_{n=5}^{\infty} \frac{1}{\ln n}$

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

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

15. $\sum_{n=1}^{\infty} \frac{n!}{10^n}$

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

17. $\sum_{n=1}^{\infty} \frac{1}{1 + \ln n}$

18. $\sum_{n=2}^{\infty} \frac{1}{\sqrt{n} \ln n}$

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

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

21. $\sum_{n=1}^{\infty} \frac{4 + |\cos n|}{n^3}$

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

Answers

1. Diverges
2. Converges
3. Diverges
4. Converges
5. Diverges
6. Converges
7. Diverges
8. Converges
9. Diverges
10. Diverge
11. Converges
12. Diverges
13. Converges
14. Converges
15. Diverges
16. Converges
17. Diverges
18. Diverges
19. Converges
20. Converges
21. Converges
22. Converges