

PRACTICE SESSION ON SERIES CONVERGENCE TESTS

Determine whether the following series converge or diverge.

Exercise 1. $\sum_{n=1}^{\infty} \frac{2 - n^3}{7n^3 + \pi}$

Exercise 2. $\sum_{n=1}^{\infty} (-1)^n \frac{n^3}{n^4 + 5}$

Exercise 3. $\sum_{n=1}^{\infty} \frac{2^n}{n!}$

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

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

Exercise 6. $\sum_{n=1}^{\infty} \frac{\sqrt{n^3 + 1}}{3n^3 + 4n^2 + 2}$

Classify the following series as absolutely convergent, conditionally convergent, or divergent.

Exercise 7. $\sum_{n=1}^{\infty} (-1)^n \frac{n}{\ln n}$

Exercise 8. $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{n^2}{n^3 + 1}$

Exercise 9. $\sum_{n=1}^{\infty} \frac{\sin(4n)}{4^n}$