

MA241 Practice on Series – Support your answer

1. Geometric Series – Converge or Diverge? If Converges, find the sum.

a.)  $3 + \frac{3}{4} + \dots + \frac{3}{4^{n-1}} + \dots$       b.)  $\sum_{n=1}^{\infty} 2^{-n} 3^{n-1}$

2. Nth Term Test - Test for Divergence – If inconclusive, use another test.

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

3. Telescoping – Converge or Diverge? If Converges, find the sum.

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

4. P-Series – Convergent or Divergent?

a.)  $\sum_{n=1}^{\infty} \frac{1}{n^6}$       b.)  $\sum_{n=1}^{\infty} \frac{1}{\sqrt[3]{n^2}}$

5. Integral Test – Converge or Diverge?

a.)  $\sum_{n=1}^{\infty} \frac{1}{(3+2n)^2}$       b.)  $\sum_{n=1}^{\infty} \frac{1}{4n+7}$

6. Comparison Test – Converge or Diverge?

a.)  $\sum_{n=1}^{\infty} \frac{1}{n^4 + n^2 + 1}$       b.)  $\sum_{n=1}^{\infty} \frac{1}{n3^n}$

7. Limit Comparison – Converge or Diverge?

a.)  $\sum_{n=1}^{\infty} \frac{\sqrt{n}}{n+4}$       b.)  $\sum_{n=1}^{\infty} \frac{1}{\sqrt{4n^3 - 5n}}$

8. Alternating Series – Absolute Convergent, Convergent, or Divergent?

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

9. Ratio Test – Absolute Convergent, Convergent, Divergent?

a.)  $\sum_{n=1}^{\infty} \frac{n!}{3^n}$       b.)  $\sum_{n=1}^{\infty} \frac{2^n}{n^2}$

MA241 Practice on Series – Support your answer

Determine which series converge and which diverge. Name the Test you use and support your answer!

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

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

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

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

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

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

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

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

9.  $\sum_{n=0}^{\infty} \frac{2^{n+1}}{5^n}$

10. Express the repeating decimal  $3.2\overline{394}$  as a series and find the rational number it represents.