

Problem Set 28

1) What is absolute convergence? If a series is absolutely convergent, is the series also convergent? Is the converse still true?

2) What is the Ratio test? The Root test? What are the possible outcomes of this test?

3) Which of the following series converge and which diverge? Explain your answers.

a) (10.5.8)

$$\sum_{n=1}^{\infty} \frac{n5^n}{(2n+3)\ln(n+1)}$$

b) (10.5.16)

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

c) (10.5.26)

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

d) (10.5.34)

$$\sum_{n=1}^{\infty} e^{-n} n^3$$

e) (10.5.38)

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

f) (10.5.42)

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