

Problem Set 26

1) What is the integral test? What does a successful integral test imply? What does a failed integral test imply?

2) For which value of p does the infinite series $\sum_{n=1}^{\infty} \frac{1}{n^p}$ converge?

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

a) (10.3.12)

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

b) (10.3.18)

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

c) (10.3.20)

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

d) (10.3.22)

$$\sum_{n=1}^{\infty} \frac{5^n}{4^n + 3}$$

e) (10.3.26)

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

f) (10.3.32)

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