

Problem Set 27

1) What is the Comparison test? The Limit Comparison test? What does a successful Comparison test imply? A failed test?

2) What are some good reference series for Comparison tests?

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

a) (10.4.8)

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

b) (10.4.15)

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

c) (10.4.22)

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

d) (10.4.24)

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

e) (10.4.38)

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

f) (10.4.54)

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