

Multiple choice problems for sections 12.1, 12.2, 12.3, 12.4

MATH 104.

Credit is given only if you choose the correct answer *and* show supporting work.

1. Find the limit of the sequence

$$\frac{1}{1+1}, \frac{2}{2+\sqrt{2}}, \frac{3}{3+\sqrt{3}}, \frac{4}{4+\sqrt{4}}, \dots$$

- A.) 0 B.) $\frac{1}{2}$ C.) $\frac{2}{3}$ D.) 1 E.) 2 F.) The sequence diverges

2. Find the value of the series,

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

- A.) 7 B.) $\frac{22}{3}$ C.) $\frac{15}{2}$ D.) $\frac{23}{3}$ E.) 8 F.) The series diverges

3. Determine whether the following series converges or diverges,

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

Justify your answer. (Clearly indicate which tests you have used.)

4. Determine whether the following series converges or diverges,

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

Justify your answer. (Clearly indicate which tests you have used.)