

**Multiple choice problems for sections 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 value of the series,

$$\sum_{n=1}^{\infty} \frac{1+3^n}{4^{n-1}} = 4 + \frac{10}{4} + \frac{28}{16} + \frac{82}{64} + \cdots .$$

- A.) 13    B.)  $\frac{27}{2}$     C.) 14    D.)  $\frac{40}{3}$     E.) 15    F.) The series diverges

2. Determine whether the following series converges or diverges,

$$\sum_{n=1}^{\infty} \frac{n+5}{n\sqrt{n+3}} = 3 + \frac{7}{2\sqrt{5}} + \frac{8}{3\sqrt{6}} + \cdots .$$

Justify your answer. (Credit is given only if you clearly indicate which tests you have used, and apply them correctly.)

3. Determine whether the following series converges or diverges,

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

Justify your answer. (Credit is given only if you clearly indicate which tests you have used, and apply them correctly.)