

Name: \_\_\_\_\_

TA: \_\_\_\_\_

Math 222

Prof. Beck

Second Exam

Fall 2004

1. Prove or disprove: the sequence  $\{\sin(2n\pi/3)\ln(n+1)/n\}$  converges.

2. For which values of  $x$  does the series  $\sum_{n=1}^{\infty} \tan(n\pi/3)x^n$  converge?  
For which does it converge absolutely?

Prove your answer.

3. Solve this differential equation:

$$y' + yf(x) = f(x).$$

4. Solve this differential equation:

$$y'' + 4y = 0.$$

5. Solve this differential equation by variation of parameters:

$$y'' - 5y' + 6y = 2e^x.$$