

PRINT YOUR NAME: \_\_\_\_\_

**Analysis Advisory Exam**  
**September 18, 2008**

Problem #	Points
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total	

**Instructions.** *Do all problems if possible. Use only one side of each sheet. Do at most one problem on each page. Write your name on every page. Justify your answers. Where appropriate, state without proof results that you use in your solutions.*

1. Prove that if  $f : [a, b] \rightarrow \mathbf{R}$  is continuous on the bounded interval  $[a, b]$  then  $f$  is Riemann-integrable on  $[a, b]$ .

2. Let  $a_n, b_n \geq 0$  for  $n \in \mathbb{N}$  and assume that  $\sum_{n \in \mathbb{N}} a_n < \infty$  and that  $\sum_{n \in \mathbb{N}} b_n < \infty$ . Prove that

$$\sum_{n \in \mathbb{N}} a_n b_n < \infty.$$

