

**Math 166: Honors Calculus II**

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

**Quiz 8** *Mar. 30, 1995*

1. a) State the Monotone Convergence Theorem for sequences.

b) Prove a) for the case of decreasing sequences.

2. a) Compute  $\lim_{x \rightarrow \infty} \left( \frac{x-c}{x+c} \right)^x$ .

b) Prove  $\lim_{n \rightarrow \infty} \sum_{k=1}^n \frac{n}{16n^2 - k^2} = \frac{1}{8} \log\left(\frac{5}{3}\right)$ . (Hint: the limit equals a certain integral.)