Problem Set 5   Real Analysis 1   Due 10/25/2002

Each problem is worth 5 points. Adequate demonstration is required for full credit.

1. Prove that $\lim_{x \to 5} \dfrac{1}{x}$ exists directly from the definition.

2. Prove that if $\lim_{x \to a} f(x) = L$ then $\lim_{x \to a} c \cdot f(x) = c \cdot L$.

3. Prove or give a counterexample: if $\lim_{x \to c \cdot a} f(x) = L$ then $\lim_{x \to a} f(x) = c \cdot L$.

4. Prove that if $\lim_{x \to a} f(x) = L$ then $\lim_{x \to a} \left[f(x) \right]^2 = L^2$.