An axiom we will assume...

Axiom: Every function

$$f : A \subset \mathbf{R}^m \to \mathbf{R}^n$$

known to be continuous from your calculus experience will be assumed to satisfy the following continuity property: if $\{x_i\}$ is a sequence of points in A converging to a point $x \in A$ then the sequence $\{f(x_i)\}$ converges to $f(x)$.

Now prove the following lemma.

Lemma: Use the above axiom to show that every function

$$f : A \subset \mathbf{R}^m \to \mathbf{R}^n$$

known to be continuous from your calculus experience is in fact a continuous function from A to $\mathbf{E}^n$ (where A is viewed as a **subspace** of $\mathbf{E}^m$).