1 April 1 - April Fools, I didn't go to class

But I do have a few notes from reading the book. An interior point a of a set S is defined such that any point in the neighborhood of a must necessarily be in S. We can also use "ball" notation, $B(a)$, denoting an n-ball centered at a, $n = \dim(S)$.

An open set is a set all of whose points are interior; S is open iff $S = \text{Int}(S)$.

An external point is then a point whose neighborhood contains no points in S (neighborhood is now taken to be n-ball etc.). Points that are neither exterior nor interior are denoted boundary points and are denoted ∂S.

This is basically all we covered on the first day of class, so I hear.

2 April 3 - Second day of class

Note some key terms: interior points, exterior points, boundary points, and the closure of a set. The former three are what they sound like (I missed the rigorous definition), and the closure of a set S is defined as the union of the set and its boundary points. This is also the smallest closed set containing S.

We then recall a result from Math 1a: Let $S \in \mathbb{R}$ be closed and obunded. Then S has both a maximum and minimum point, called the supremum and infinum respectively.

We define a set $C \in \mathbb{R}^n$ to be compact if each of its open subsets is U_i, C can be spanned by the union of finitely many of them. For example, finite sets are compact while open sets $(0, 1)$ are not compact.

We then cite the Heine-Borel Theorem: $S \in \mathbb{R}^n$ is compact iff S is closed and bounded. The proof takes a long time, so I'm not going to write it down =D

We then discuss limits and continuous functions, $f : D \in \mathbb{R}^n \to \mathbb{R}^m$. A few examples were given, but I'm not sure where this is going. Will check after class. Also, note that $m = 1$ gives a scalar function, $n > 1$ gives a vector function.

We then discuss limits for real! The standard definition, if $x \to a \Rightarrow f(x) \to b$, then

$\lim_{x\to a} f(x) = b$. We can make this more rigorous with the $\delta - \epsilon$ definition.