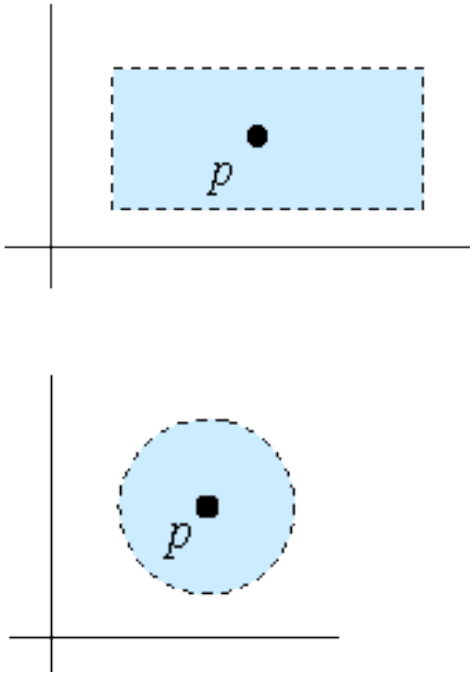
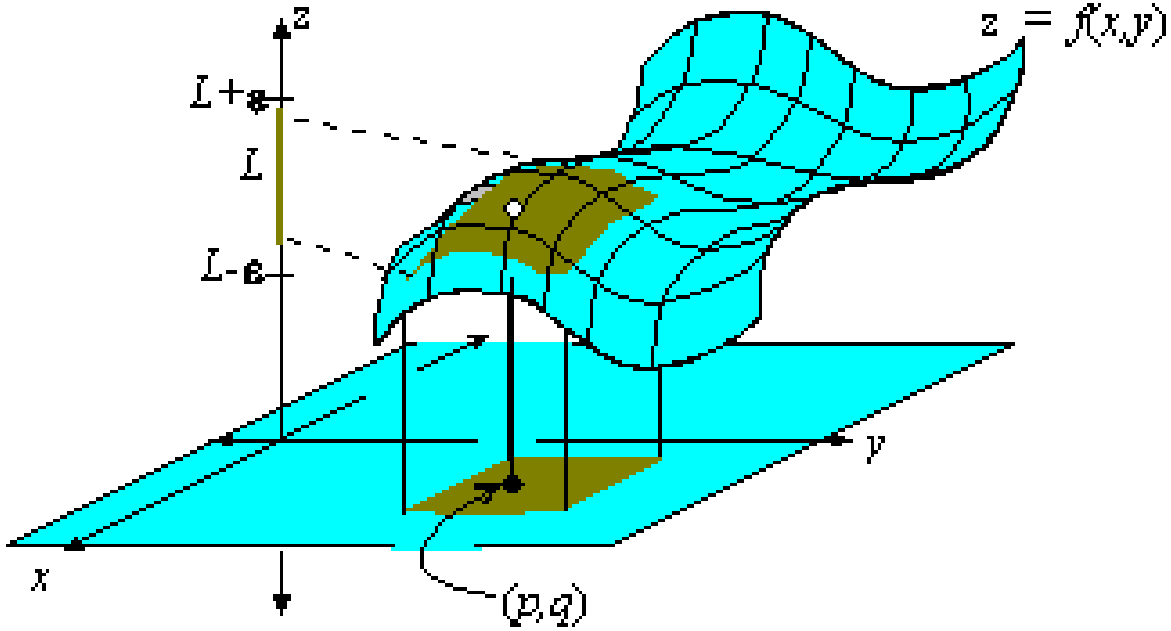
Motivation:

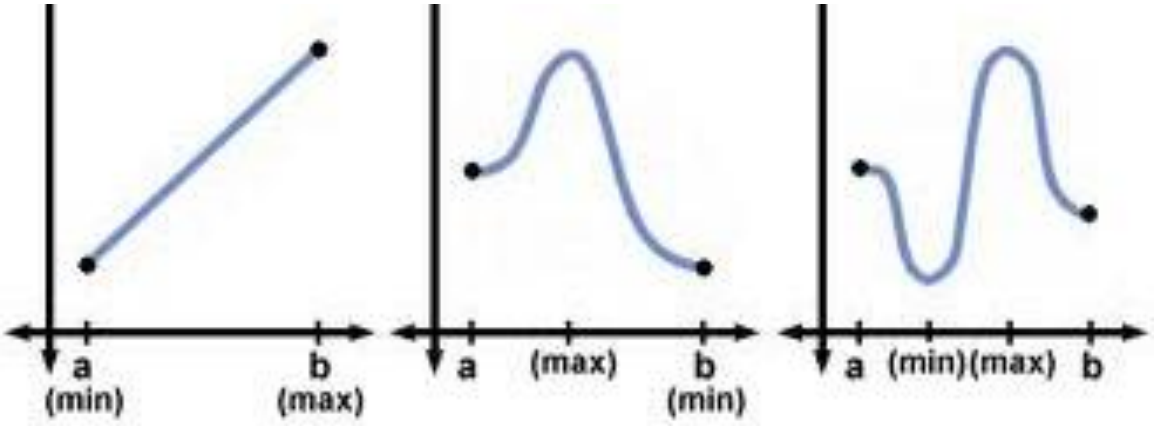
To begin with, let us define any connected open set that contains a point **p** to be a *neighborhood* of **p**. For example, an *open ball* of radius $\delta > 0$ about **p**, which is the set of all **x** such that $\| \mathbf{x}-\mathbf{p} \| < \delta$, is a neighborhood of **p**. Any open rectangle containing **p** is also a neighborhood of **p**.





From: http://math.etsu.edu/multicalc/Chap2/Chap2-2/index.htm

Extreme Value Thm: If f: [a, b] → **R** is continuous, then ∃ c, d ∈ [a, b] s.t. f(c) ≤ f(x) ≤ f(d) ∀ x ∈ [a, b].



http://www.sparknotes.com/math/calcab/applicationsofthederivative/section3.rhtml

What is the minimum hypothesis such that the Extreme Value Theorem holds: Suppose f: X → Y…

Some common symbols:

∃ = there exists ! = unique ∃! = there exists a unique

∀ = for all ∋ = s.t. = such that

$y \in Y \in \mathcal{Y}$:

lower case = element

Upper case = set

Caligraphy {\cal Y} = collection of sets.

Want to learn more about point-set topology:

Do a MathSciNet search: http://www.ams.org/mathscinet/

Use MSC Primary: 54 for general topology

To find other MSC numbers: http://www.ams.org/mathscinet/searchMSC.html

If you are off-campus, you will need to log into MathSciNet via the Math Library website:

http://www.lib.uiowa.edu/math/index.html

Note most articles found by MathSciNet are research articles. Unfortunately, this class will not prepare you to read most of these articles—but don't let that stop you if you have an interest in them.