SURFACES AND MAPS

DIFFERENTIAL GEOMETRY, SPRING 2015

Central Theme

Parametrizations of the sphere give us interesting maps of the Earth. Which ones have good geometric properties?

Minimum Requirements

Write a paper exploring some examples of parametrizations of a sphere as pertains to map-making.

- 7-10 pages, in LaTeX, with attention paid to standard English grammar, spelling and usage.
- Find and describe several different types of parametrizations which have interesting geometric properties.
- Include images where appropriate.
- Prove the properties of the maps which are interesting!

Extension

Can you make good maps of South America using each of the styles you choose to explore?

Resources

The wikipedia page for "map projections" has lots of interesting things.
http://en.wikipedia.org/wiki/List_of_map_projections
The conformal mapping section of Struik has good information. ch 5 section 3.

Be sure to explore at least one conformal map, at least one equi-areal map, and at least one gnomonic projection map. A polyconic one might be neat, too.