Math 303, Fall 2006
Assignment for Dec. 02 - 05

- Read pages 775-781 of the textbook (Riley-Hobson-Bence, 3rd Edition).

- Solve Problems 22.1, 22.2 of the textbook.

- Solve the following problems.

  1. Find the stationary points of the following functionals.

  $$\mathcal{F}[y(x)] = \int_a^b \sqrt{1 + \frac{y'^2}{y^2}}\, dx,$$

  $$\mathcal{G}[y(x)] = \int_a^b \frac{\sqrt{1 + y'^2}}{1 + y}\, dx,$$

  2. Let S be the surface of revolution of the curve $z = x^2$ about z-axis. Find the differential equation determining the geodesics on S and obtain its solution.