Math 303, Fall 2006
Assignment for Dec. 07-11

- Read pages 775-782, 788-789 and 824-827 of the textbook (Riley-Hobson-Bence, 3rd Edition)
- Solve the following problems.

1. Find the stationary points of the following functionals.

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

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.
   Hint: Use cylindrical coordinates.