

Physics 411
Homework 1: Calculus of variations - Due Sep. 10, 2009

Problem 1: Show that the shortest curve connecting two points on the surface of a cylinder is a helix.

Problem 2: Consider a bead moving along a frictionless wire. The wire begins and ends at fixed points in space of unequal height, and you can add or subtract wire. Find the shape the wire should take, so that the bead (starting from rest at the top point) reaches the bottom point in the least time. Plot this function.