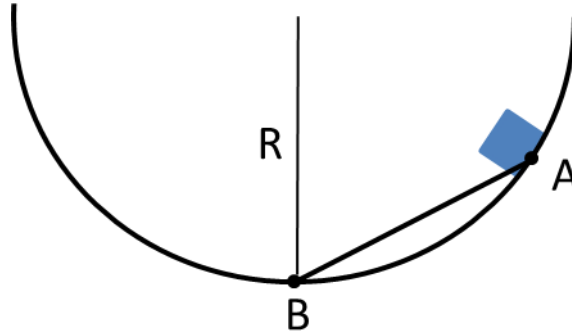Homework 18

1. An ice cube is placed in point A on the internal surface of a sphere with a radius R (see picture below). Find period of oscillations of the cube with respect to the lowest point B of the sphere. The length of arc AB is much less than radius R. There is no friction between the cube and the surface of the sphere. (*Hint: compare this system with a pendulum of length R*).

2. The length of the arc AB is definitely more than this of of straight segment AB. Is the sliding time along the arc AB longer than the sliding time along the plane AB (see Figure above)?. Prove your answer.