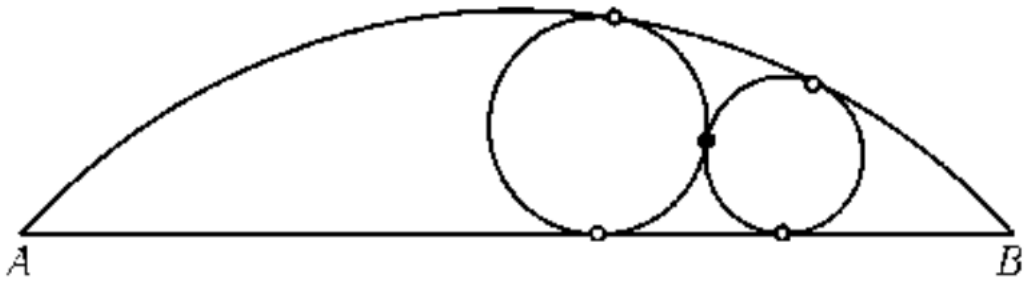
Homework for May 5, 2024.

Inversive Geometry.

1. Consider the inversion with the inversion circle at the point (0,0) and radius R. Suppose that the point P is given by the complex number z=x+iy. What is the complex number corresponding to the point P' which is the image of P under the inversion?

2. All possible pairs of mutually tangent circles are inscribed into a given segment (see figure). Find the locus of all tangent points of those circles.

   Hint: Consider an inversion with the center A.



3. Construct a circle going through two given points A and B and tangent to a given circle S (or a given straight line l).

   Hint: Consider an inversion with the center A.

4. Construct a circle going through a given point A and perpendicular to two given circles S_1 and S_2.

   Hint: Consider an inversion with the center A.