For this homework set you are allowed to work with other members of either of the geometry classes. However, must cite everyone with whom you have discussed your problem. In addition, you may NOT consult with anyone (except me) when you write your paper explaining your problem(s).

“The intelligent man finds almost everything ridiculous, the sensible man hardly anything.” – Johann von Goethe

“Know myself? If I knew myself, I’d run away.” – Johann von Goethe

Problems

Remember that you may use any previous problem as part of the justification for your problem(s).

1. (All) Do any two (2) of the following.

   (a) Use the Klein model to show that in the hyperbolic plane there exists a pentagon with five right angles and there exists a hexagon with six right angles. You may do this problem by exhibiting the appropriate pentagon and hexagon in a carefully drawn picture. That is, you need not articulate a full proof.

   (b) Prove that we can construct (using straightedge and compass) the common perpendicular of the two divergently parallel Poincaré lines \(l\) and \(m\) in the following figure. [One way to approach this is to use the “Power of a point \(O\) relative to the three circles.]

   (c) Do exercise \(P-6\) of Chapter 7. [Requires algebraic manipulations.]