

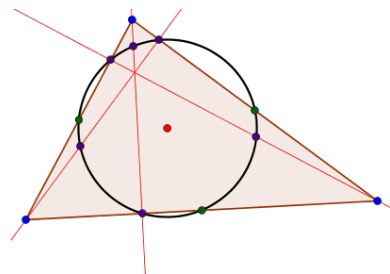
*Euclidean Geometry:
An Introduction to Mathematical Work*

Math 3600

Spring 2017

The Regular Pentagon Rides Again

The next three tasks concern the following construction template for inscribing a regular pentagon in a circle.



Given a circle with center O ,

1. Draw any line through O ; get A and B .
2. Draw $\odot AB$.
3. Draw $\odot BA$, get C as intersection of last two circles.
4. Draw line OC , get D between O , C as intersection with given circle.
5. Draw $\odot DO$, get E, F as intersections with given circle.
6. Draw EF , get G as intersection with OC .
7. Draw circle $\odot GA$, get point H as intersection with ray DO .
8. Draw circle $\odot A(OH)$, get points I, J as intersections with given circle.
9. Draw circle $\odot B(IJ)$, get points K, L as intersections with the given circle.
10. (five steps) Draw segments BK, KJ, JI, IL, LB .

The notation $\odot A(BC)$ means a circle with center A and radius congruent to segment BC .

16.1 Conjecture. Triangle OAI is isosceles and its base angles are twice the angle at O .

16.2 Conjecture. Triangle BJI is isosceles and its base angles are twice the angle at B .

16.3 Conjecture. Show that $BKJIL$ is a regular pentagon.