

Homework #3: Circumcircles and Tangents**College Geometry**

In this activity you will carry out some basic constructions using GeoGebra. If you have never used GeoGebra before, don't worry; for what we need it to do, it is fairly straightforward. If you get stuck, ask for help!

Each of the following problems should be constructed on a separate file, and these files should be given descriptive titles **including your name and the activity number**. When you are finished, email the files to me. So I should get four files from you, with names like "Nathan Bloomfield - A1 - construct equilateral triangle.ggb".

Finally, **your constructions must be robust**. Every geometric construction starts with one or more *free elements*; these are points and lines given in the hypotheses of the construction proof. You should be able to **move the free elements around** without destroying your construction.

1. **Construct the circumcircle of a triangle.** Start by placing three free points a , b , and c , and draw the segments \overline{ab} , \overline{bc} , and \overline{ca} . Following the proof we gave in class, construct the circumcenter and circumcircle of $\triangle abc$.

Make your construction into a GeoGebra tool.

2. **Construct the tangents to a circle through an exterior point.** Start by placing three free points a , b , and o , and draw the circle centered at o and passing through a . Following the proof we gave in class, construct the two lines passing through b which are tangent to the circle.

Make your construction into a GeoGebra tool.