

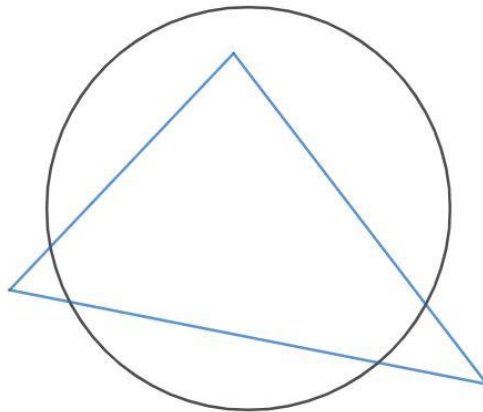
EECS 118
Knowledge Engineering and Software Engineering
Fall 2018

Term Project
Option II: A Geometry Problem Solver
Project Supplement
Problem Set T

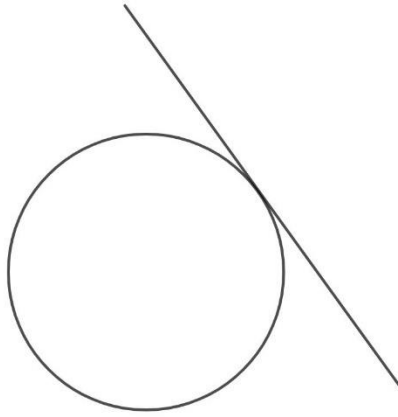
You are required to create a separate solver for each one of the following problems. Please use Python 3.5 or above as your programming language for the solver program.

Assigned Problems:

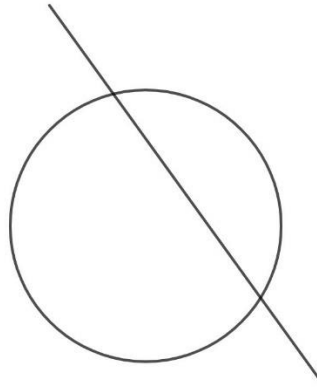
1. A triangle and a circle have four intersection points:
There is one intersection on each one of the two sides. Two other intersections are on the third side of the triangle.



2. A line segment and a circle have one intersection point:
The line is tangent to the circle.



3. A line segment and a circle have two intersection points:



You are encouraged to draw your own diagrams according to the description. The diagrams above are only for your reference, you need to consider all cases as long as they meet the description. Please also consider boundary cases.

Extra Credits:

Instead of creating solvers for the above problems, design a solver that can solve any one circle and one triangle problems.

Resources:

[Learn Python in 60 Minutes from Java](#)

[How to solve a triangle](#): You can start here.

[Review on Circles](#): In case you need a review on circles.

[Law of Sines--Ambiguous Case](#): A special case.

[Single Triangle Calculator](#): An online demo of single triangle problem solver.

[SymPy Geometry Module](#): SymPy is a Python library, you may find its geometry module helpful.