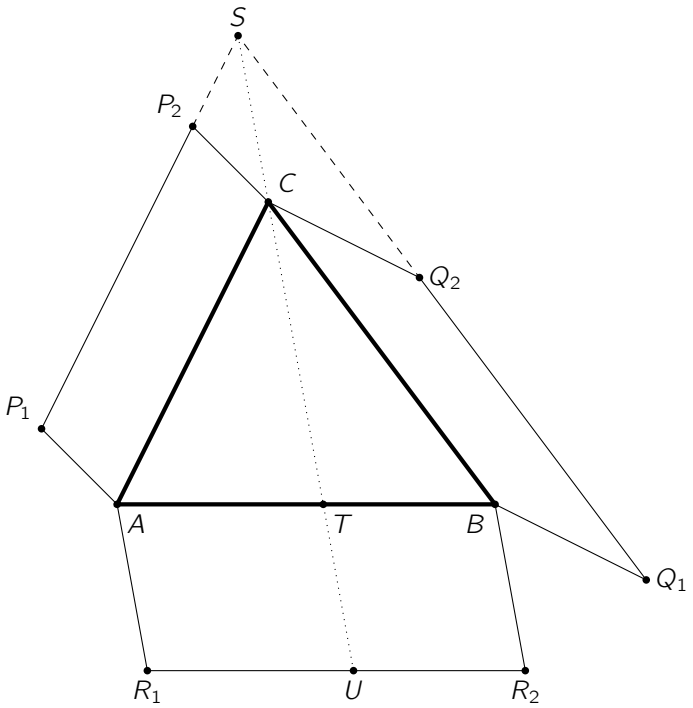
quiz 1
math228, classical geometry
fall 2021

The quiz is worth 10 points. Justify all your claims rigourously.

Consider the following construction :
Let ABC be a triangle. Suppose AP_1P_2C, BQ_1Q_2C are two parallelograms lying outside of the triangle ABC. Let P_1P_2 and Q_1Q_2 meet in S. Draw the segments AR_1, BR_2 lying outside of triangle ABC, parallel to SC and such that $|AR_1| = |BR_2| = |SC|$.



a. Show the following result due to Pappus of Alexandria : *The area of the parallelogram AR_1R_2B is equal to the sum of the areas of AP_1P_2C and BQ_1Q_2C.* (10 points)

b. Explain (and prove) why this theorem is a generalization of the Pythagorean theorem. (bonus 5 points)