Mathematics 2260H – Geometry I: Euclidean Geometry
TRENT UNIVERSITY, Winter 2021

Assignment #9 – Cevianity
Due on Friday, 26 March.

1. Use Ceva's Theorem to show that the medians of a triangle are concurrent. *[1]*

2. Suppose that T, U, and V are the points where the incircle of $\triangle ABC$ touches the sides BC, AC, and AB, respectively. Show that the cevians AT, BU, and CV are concurrent. *[2]*

3. Suppose P, Q, and R are points on the sides (not their extensions) of the sides BC, AC, and AB of $\triangle ABC$. Determine whether it is true that the cevians AP, BQ, and CR are concurrent if and only if $\dfrac{\sin(\angle ACR)}{\sin(\angle RCB)} \cdot \dfrac{\sin(\angle BAP)}{\sin(\angle PAC)} \cdot \dfrac{\sin(\angle CBQ)}{\sin(\angle QBA)} = 1$. *[7]*