

Mathematics 2260H – Geometry I: Euclidean Geometry

TRENT UNIVERSITY, Winter 2023

Assignment #8 – Excentres and Excircles

Due on Friday, 17 March.

In the lecture of 2023-03-05 we concluded by showing that the bisectors of the internal angles of a triangle are concurrent in a point, the incentre, which is the centre of a circle, the incircle, which is tangent to all three sides of the triangle.

1. Given any triangle, show that there are three more circles outside the triangle which are tangent to all three sides, or their extensions, of the triangle, and explain how to locate their centres. [5]

NOTE. These three circles are the *excircles* of the triangles, and their centres are the *excentres* of the triangle.