

Mathematics 2260H – Geometry I: Euclidean Geometry

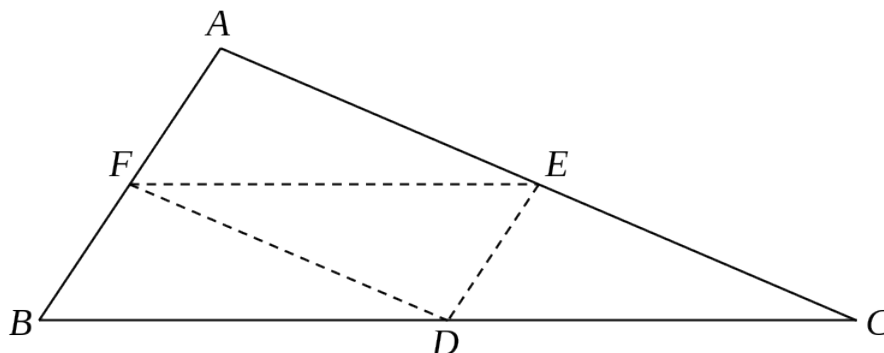
TRENT UNIVERSITY, Winter 2024

Assignment #2

Subdivision, Similarity, and Congruence

Due just before midnight on Friday, 26 January.*

Please read, or at least skim, through the handout *Similar Triangles and Similarity Criteria* before tackling the rest of this assignment. In particular, note the definition of similarity and the criteria for establishing the similarity of triangles.



In what follows, we are given some $\triangle ABC$. Let D , E , and F denote the midpoints of the sides BC , AC , and AB , respectively. If we connect these midpoints, we subdivide $\triangle ABC$ into four smaller triangles: $\triangle AFE$, $\triangle FBD$, $\triangle EDC$, and $\triangle DEF$.

1. Show that $\triangle AFE$, $\triangle FBD$, $\triangle EDC$, and $\triangle DEF$ are all similar to $\triangle ABC$. [5]
2. Show that $\triangle AFE$, $\triangle FBD$, $\triangle EDC$, and $\triangle DEF$ are all congruent to each other. [5]

* You should submit your solutions via Blackboard's Assignments module, preferably as a single pdf. If submission via Blackboard fails, please submit your work to your instructor by email or on paper.