Mathematics 2260H – Euclidean Geometry
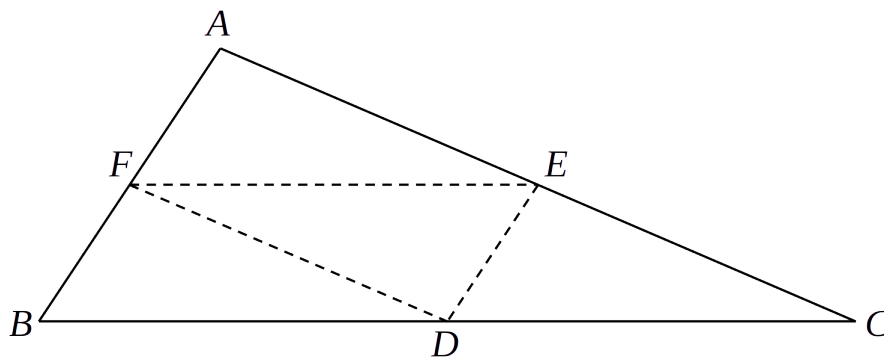### Assignment #2
Triangles and Angles
Due on Friday, 24 January.*

Please read, or at least skim, through the handout *Similar Triangles and Similarity Criteria* before doing this assignment. In particular, note the definition of similarity and the criteria for establishing the similarity of triangles. For this assignment you may freely use the fact that the interior angles of any triangle add up to two right angles, even though this fact is equivalent to the parallel postulate.
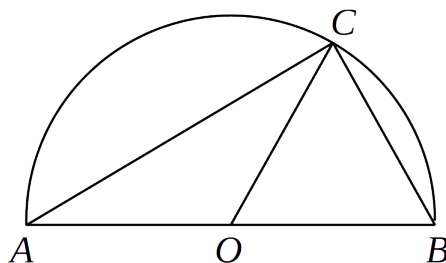
1. Suppose that AB is the diameter of a circle, O is the centre of the circle (and hence also the midpoint of AB), and C is some point on the circle different from both A and B. Show that $\angle BOC = 2\angle BAC$. *[5]*

2. Suppose that D, E, and F are the midpoints of the sides BC, AC, and AB, respectively, of $\triangle ABC$. Show that $\triangle DEF \sim \triangle ABC$. *[5]*