

Answer on Question #57250 – Math – Geometry

Question

How to prove that a median of an isosceles triangle also bisects the vertex angle?

The sides of the triangle are MA, HA & MH. MA is congruent to HA. The median is AT. I must prove that median AT bisects angle MAH. Thank you!

Proof

By definition of an isosceles triangle, MA is congruent HA (it is the same as AM is congruent to AH).

By definition of a median AT, MT is congruent to HT.

By construction, AT is the common side in triangles AMT and AHT.

By SSS (side-side-side) Theorem, triangles AMT and AHT congruent.

As corresponding parts of congruent triangles are congruent, angle HAT is congruent to angle MAT.

By definition of angle bisector, AT bisects angle HAM.