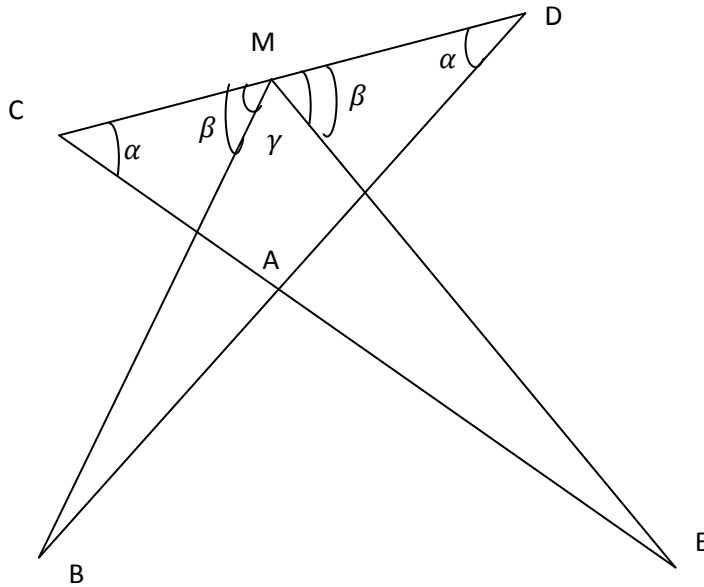


Let $BD \cap CE$ (call it A) such that $B \hat{=} A \hat{=} D$ and $C \hat{=} A \hat{=} E$...If M is the midpoint of DC , $\angle ACM$ congruent $\angle ADM$, $\angle BMC$ congruent $\angle EMD$, then $AE = AB$?

Solution:



1) Because $\angle ACM = \angle ADM$ then $CA = DA = b$ by Base Angle Converse.

(<http://www.regentsprep.org/Regents/math/geometry/GPB/theorems.htm>)

2) Because M is the midpoint of DC then $CM = DM$.

3) $\angle CME = \angle DMB$ because $\angle CME = (\beta + \gamma)$ and $\angle DMB = (\beta + \gamma)$.

4) By Angle-Side-Angle Congruence we have

$$\triangle CME = \triangle DMB.$$

Thus

$$CE = DB,$$

$$CA + AE = DA + AB,$$

$$b + AE = b + AB,$$

$$AE = AB$$

that we'll need to prove.