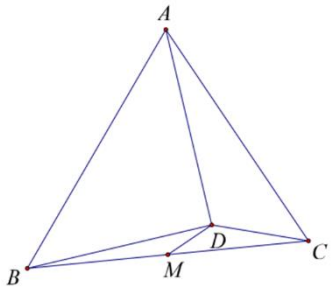
Example 8 : As shown in Figure 1, it is known that D *is* a point inside $\triangle ABC$, $\angle DAC = \angle BDM$, M is the midpoint of BC, $\angle ABD = \angle ACD$, verify that $\angle ADB = 90°$.



Proof: Suppose $\left(\frac{D-A}{D-B}\right)^2 = T$, $\frac{D-\frac{B+C}{2}}{\frac{D-B}{A-C}} = T_1$, $\frac{\frac{B-A}{B-D}}{\frac{C-D}{C-A}} = T_2$, $T + T_2 - 2T_1T_2 - 1 = 0$