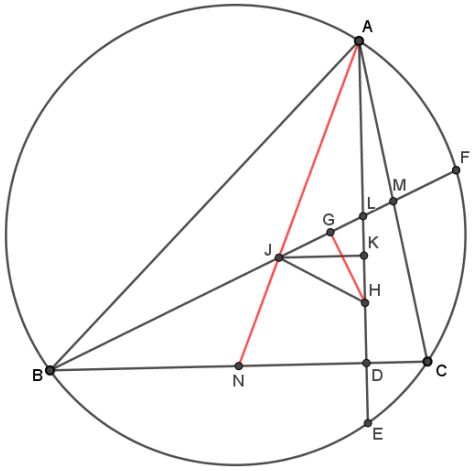
Author's Solution -Nov 2025



Construction :

Draw the median AN through J. Join GH.

Proof:

JK ⊥ AD. & AD ⊥ BC (given)

⇒ JK ∥ BC, ie JK ∥ ND

$\Rightarrow \frac{AJ}{JN} = \frac{AK}{KD} = \frac{2}{1}$

ie AK : KD = 2 : 1

As DH= DE, by Orthocentre Theorem,

H is Orthocentre.

And GM = MF (given)

∴ By Eight Points Circle Theorem (Page no :23 of **"Advanced Theorems on Geometry"** available in this site)

J, H, K, G lies on the Eight Points Circle and JH is the diameter.

⇒ in ΔLJH, HG & JK are altitudes.

∴ By Sides & Altitudes Theorem -2 (Page no : 59 of **"Advanced Theorems on Geometry"** available in this site)

$(JL \times JG) + (HL \times HK) = JH^2$ ---------- **Hence Proved**

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Solution given by

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