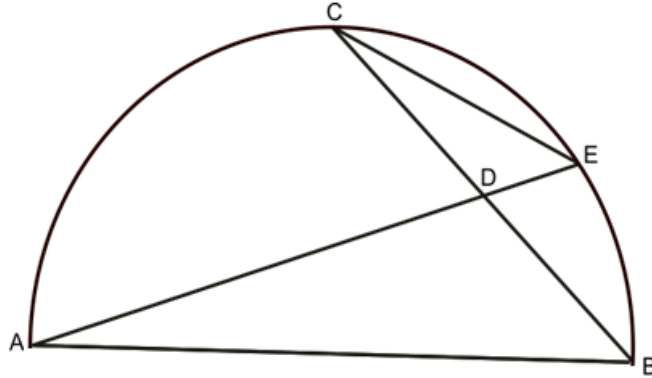


Cash Award Question for Apr-2026



In the picture, ACB is a semicircle and AB is its diameter. C is the midpoint of the semicircular arc AB. D is the midpoint of the chord BC. AD produced meets the semicircle at E.

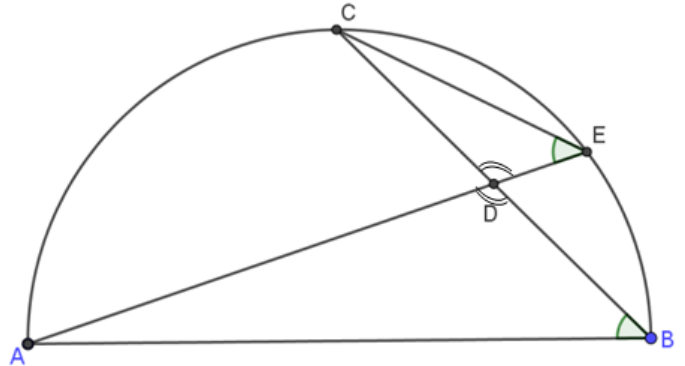
Prove: $AB^2 = 5CE^2$.

Question framed by
DR. M. RAJA CLIMAX, IRS
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Author's Solution Apr-2026

Given :

ACB is a semicircle. C is the midpoint of semicircular arc ACB. AB is its diameter and D is the midpoint of BC.



To Prove:

$$AB^2 = 5CE^2$$

Solution :

As per SAT Theorem in the book "**Advanced Theorems on Geometry**" by Raja Climax (Page No : 58),

$$AD \times AE + BD \times BC = AB^2$$

$$AD^2 + 3CD^2 = AB^2$$

$$AD^2 = 8CD^2 - 3CD^2 \quad [AB^2 = 2BC^2 = 8CD^2]$$

$$AD^2 = 5CD^2 \text{ -----(1)}$$

$\Delta CDE \sim \Delta ADB$ [by AA Similarity]

$$\frac{CE}{AB} = \frac{CD}{AD}$$

$$\frac{CE^2}{AB^2} = \frac{CD^2}{AD^2} = \frac{1}{5} \quad [\text{by (1)}]$$

$$AB^2 = 5CE^2 \text{ -----Proved}$$

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