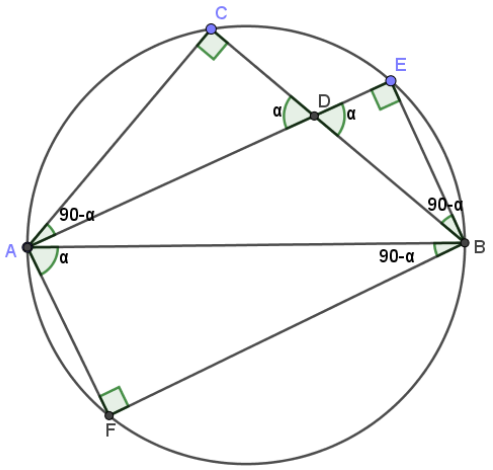
Author's Solution May-2026



Given:

AB is diameter and $\angle ADC = \angle BAF$

To Prove :

BAxBF = AExAC + BExBC

Proof:

$\angle ACB = \angle AEB = \angle AFB = 90°$ (angles in a semicircle)

Let $\angle ADC = \angle BAF = \alpha$

$\angle EDB = \angle CDA = \alpha$ (vertically opposite angles)

$\angle ABF = \angle CAD = \angle DBE = 90° - \alpha$

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

ADxAE + BDxBC = AB^2

ADxAE + BDxBC = AB x AB

$\frac{\text{ADxAE}}{AB} + \frac{\text{BDxBC}}{AB} = AB$ ----------(1)

$\Delta DAC \sim \Delta ABF$ [by AAA similarity]

$\frac{AD}{AB} = \frac{AC}{BF}$ ----------(2) [Corresponding sides are proportional]

$\Delta DBE \sim \Delta ABF$ [by AAA similarity]

$\frac{DB}{AB} = \frac{BE}{BF}$ ----------(3) [Corresponding sides are proportional]

Sub. (2) & (3) in (1)

$\frac{\text{ACxAE}}{BF} + \frac{\text{BExBC}}{BF} = AB$

ACxAE+ BExBC = ABxBF

BAxBF = AExAC+BExBC ----------**Proved**

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