A Proof of Pythagoras' Theorem

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In Fig.1 is shown a right triangle ABC, and the aim is to prove that

$$AB^2 = BC^2 + CA^2 \, . \qquad (1)$$

Triangles AFB, BDC, and CEA represent ¼ th of the squares built on the respective sides of triangle ABC. From Fig. 1 we have

$$\text{Area(BDG)} = \text{Area(GEA)} = \text{Area(AHG)} = \text{Area(AHC)} = \text{Area(AOC)} = \text{Area(OBC)} \, . \qquad (2)$$

Further for the trapezoid ABDE we have

$$\text{Area(ABG)} + \text{Area(BDG)} + \text{Area(GEA)} = \text{Area(ABC)} + \text{Area(BDC)} + \text{Area(CEA)} \, . \qquad (3)$$

Since Area(ABG) = Area(AFB), and Area(ABC) = Area(AOC) + Area(OBC), from (2) and (3) follows

$$\text{Area(AFB)} = \text{Area(BDC)} + \text{Area(CEA)} \, , \qquad (4)$$

and therefore follows (1).

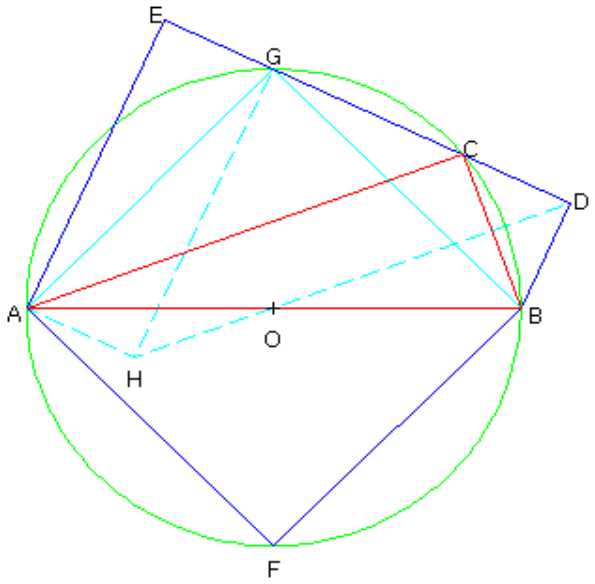

Fig. 1