A Proof of Pythagoras' Theorem

Avni Pllana

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

$$AB^2 = BC^2 + CA^2 \,. \tag{1}$$

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

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

Further for the trapezoid ABDE we have

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

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

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

and therefore follows (1).

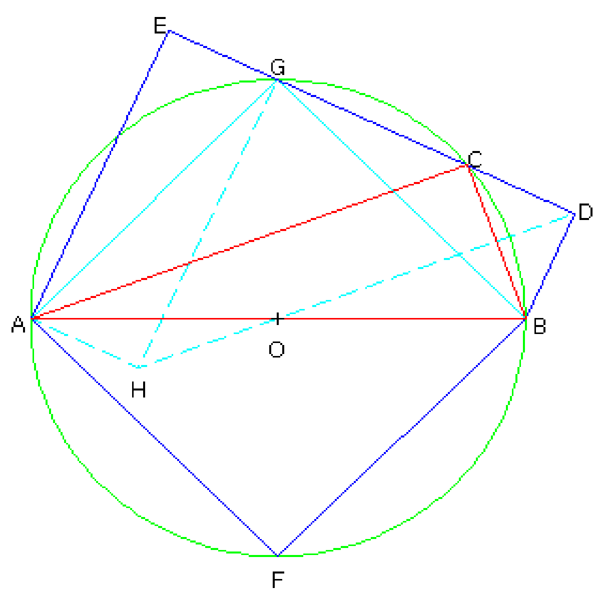

Fig. 1