Yahoo Answer dated 03-09-2013

Question: ΔABC is right angled triangle at B. Side BC is trisected at points D and E.Prove that $8AE^2 = 3AC^2 + 5AD^2$?

Solution: Let $AB = y$ units and $BD = DE = EC = x$ units.

Now by pythogorus theorem, $AD^2 = x^2 + y^2$, $AE^2 = (2x)^2 + y^2$ and $AC^2 = (3x)^2 + y^2$.

LHS $= 8AE^2 = 8(4x^2 + y^2) = 32x^2 + 8y^2$

RHS $= 3AC^2 + 5AD^2 = 3(9x^2 + y^2) + 5(x^2 + y^2) = 32x^2 + 8y^2$.

Thus LHS=RHS.