Projeto Mathematical Ramblings

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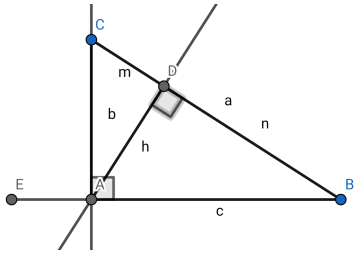
Demonstração do teorema de Pitágoras:

Seja ΔABC um triângulo retângulo em A:



$m(\overline{BC}) = a$
$m(\overline{AC}) = b$
$m(\overline{AB}) = c$
$m(\overline{AD}) = h$
$m(\overline{DB}) = n$
$m(\overline{DC}) = m$

Pelo caso AA, $\Delta ABC \sim \Delta DAC \sim \Delta DBA \Rightarrow$

$$\Rightarrow \frac{a}{c} = \frac{b}{h} = \frac{c}{n} \wedge \frac{a}{b} = \frac{b}{m} = \frac{c}{h} \Rightarrow$$

$$\Rightarrow ah = bc \wedge an = c^2 \text{ (I) } \wedge bn = hc \wedge am = b^2 \text{ (II) } \wedge bh = cm$$

Somando (I) e (II): $a(m+n) = b^2 + c^2 \Rightarrow \boxed{a^2 = b^2 + c^2}$

Documento compilado em Saturday 25$^{\text{th}}$ January, 2020, 11:52, UTC +0.

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