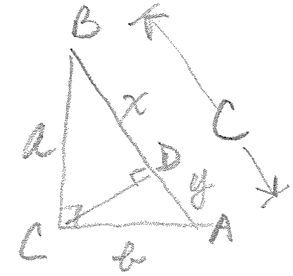
Proof of Pythagorean Theorem

Given: $\triangle ABC$ with right $\angle C$

Prove: $a^2 + b^2 = c^2$



① Draw $\overline{CD} \perp \overline{AB}$. → ② $\frac{a}{c} = \frac{x}{a}$ → ③ $a^2 = cx$

④ $\frac{b}{c} = \frac{y}{b}$ → ⑤ $b^2 = cy$

→ ⑥ $a^2 + b^2 = cx + cy$

⑦ $a^2 + b^2 = c(x+y)$

⑧ $c = x + y$

→ ⑨ $a^2 + b^2 = c(c)$

⑨a $(c)(c) = c^2$

→ ⑩ $a^2 + b^2 = c^2$

① Thru a pt not on the line, there is exactly 1 line $\perp$ to given line.

② When an altitude is drawn from the rt $\angle$ to the hypotenuse, the leg is the geometric mean between the hypotenuse and the hyp segment adjacent to that leg.

③ Means extremes product of proportion (prop of proportions)

④ Same as #2

⑤ Same as #3

⑥ addition property

⑦ distributive property

⑧ segment addition property

⑨ Substitution

⑨a power definition.

⑩ Substitution