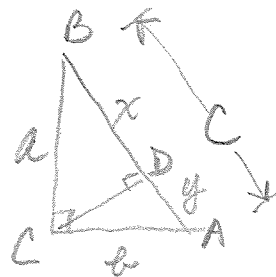


Proof of Pythagorean Theorem

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

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



$$\left. \begin{array}{l} \textcircled{1} \text{ Draw } \overline{CD} \perp \overline{AB}, \rightarrow \textcircled{2} \frac{a}{c} = \frac{x}{a} \rightarrow \textcircled{3} a^2 = cx \\ \textcircled{4} \frac{b}{c} = \frac{y}{b} \rightarrow \textcircled{5} b^2 = cy \end{array} \right\} \rightarrow \textcircled{6} a^2 + b^2 = cx + cy$$

$$\left. \begin{array}{l} \textcircled{7} a^2 + b^2 = c(x+y) \\ \textcircled{8} c = x+y \end{array} \right\} \rightarrow \textcircled{9} a^2 + b^2 = c(c) \rightarrow \textcircled{10} a^2 + b^2 = c^2$$

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

④ Same as #2

⑤ Same as #3

⑥ addition property

⑦ distributive property

⑧ segment addition property

⑨ substitution

⑩ power property.