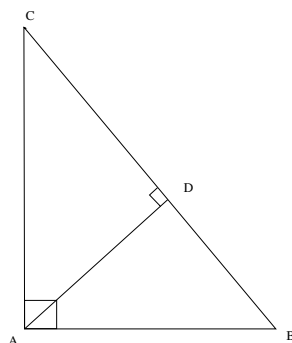


A Pythagorean-like Theorem

Submission deadline: June 30th 2018

Consider the right triangle



Let the length of **AB** be a , the length of **AC** be b and the length of **AD** be h . Prove that

$$\frac{1}{a^2} + \frac{1}{b^2} = \frac{1}{h^2}$$

The problem was solved by

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Discussion;

Using similar triangles it can be easily seen that

$$\frac{h}{a} = \frac{b}{\sqrt{a^2 + b^2}}$$

Squaring both sides and simplifying leads to

$$\frac{a^2 + b^2}{a^2 b^2} = \frac{1}{h^2}$$

Thus,

$$\frac{1}{b^2} + \frac{1}{a^2} = \frac{1}{h^2}$$