

9/22/21

PS

I: Look up a Pythagorean theorem joke!

Pythagoras walks over a bar and says $x^2 + z^2 = y^2$, and the bartender says:
(1) (why?) the long face?

(b) Where m, n are integers, $a = m^2 - n^2$, $b = 2mn$

$a^2 + b^2 = c^2$ where $c = m^2 + n^2$

$(m^2 - 2mn + n^2) + (4m^2n^2)$

$a = m^2 - n^2 \rightarrow a^2 = (m^2 - 2mn + n^2)$, $b = 2mn$, $b^2 = 4m^2n^2$

$= 4m^2n^2$

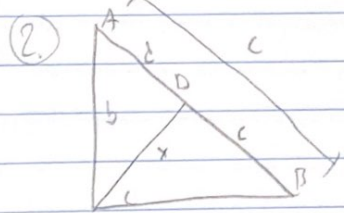
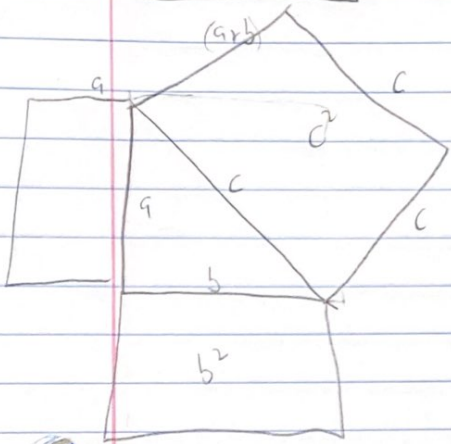
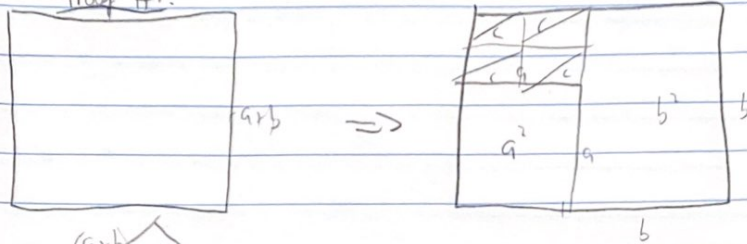
$c^2 = m^2 + n^2$

II: Pythagorean Theorem: $a^2 + b^2 = c^2$ where a, b are the short sides of a right triangle and c is the hypotenuse

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PS

Prüf #1:



$$\frac{BC}{AB} = \frac{BE}{CB} \rightarrow \frac{a}{c} = \frac{b}{c}$$

$$\frac{CA}{AB} = \frac{EA}{AC} \rightarrow \frac{b}{c} = \frac{a}{c}$$

$$(ca)^2 = \frac{c}{a}(ac) = a^2ce$$

$$(cb)^2 = \frac{c}{b}(bc)$$

$$b^2 \geq cd \rightarrow a^2b^2 \geq cd^2 \Rightarrow a^2b^2 = (cd)^2$$

So $a^2b^2 = c^2$

- (3) (3,4,5), (5,12,13), (8,15,17)