Vivian Choong
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Attendance Questions 5
9/22/21

(1) Look up a joke based on the Pythagorean Theorem
Once upon a time there were three ladies of the First Peoples of America sitting around the campfire
- On a reindeer skin sat on a lady who was the mother of a mighty warrior who weighed 140 pounds.
- On a buffalo skin sat a lady who was the mother of a fine young warrior who weighed 160 pounds
- The third lady was sitting on a hippopotamus skin weighed a mighty 300 pounds.
The squaw on the hippopotamus is equal to the sons of the squaws on the other two hides.

(2) Complete the Lemma proof by hand

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

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

$$m^4 - 2m^2n^2 + n^4 + 4m^2n^2 = m^4 + 2m^2n^2 + n^4$$

$$m^4 + 2m^2n^2 + n^2 = m^4 + 2m^2n^2 + n^4$$

Attendance for Dr. Z.'s MathHistory for Lecture 5 (due no later than 10 minutes after class)

NAME: (print!) Vivian Chuong

Email to DrZlinear@gmail.com right after class

Subject:p5

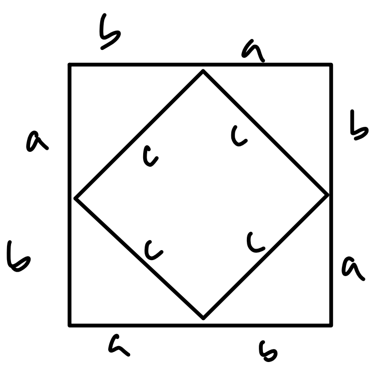
with an attachment p5FirstLast.pdf

Part I: List all the "attendance questions" during the lecture, followed by your answers.

Part II:

1. State the Pythagorean Theorem and prove it in **two ways** $a^2 + b^2 = c^2$

(I) Using the decomposition of an $(a+b) \times (a+b)$ square into an $a \times a$ square, a $b \times b$ square, and four right-angled triangles with sides a, b and hypotheneus c, and comparing it with a decomposition consisting of a $c \times c$ square and four right-angled triangles with sides a, b and hypotheneus c,



$(a+b)^2$ = Area of large triangle

$a^2 + 2ab + b^2 = 4ab + c^2$

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

(II) Using similar triangles, by taking a right-angled triangle ABC with such that $|AC| = b$ and $|BC| = a$, and $|AB| = c$, such that AB is horizontal, calling the projection of C to AB, C', and considering the three triangles ABC, ACC' and BCC'.

2. Find the first three smallest *primitive* Pythagorean triples.

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