THE PLIMPTON 322 TABLET

Please do not write on the exam paper, and do not forget to give back the examination paper at the end of the test

Plimpton 322 is a Babylonian clay tablet, notable as containing an example of Babylonian mathematics. It has number 322 in the Plimpton Collection at Columbia University. This tablet has a table of four columns and 15 rows of numbers in the cuneiform script of the period. The tablet is believed to have been written about 1800 BC, based in part on the style of handwriting used for its cuneiform script.

This table lists what are now called Pythagorean triples, i.e., integers a, b, c satisfying $a^2 + b^2 = c^2$.
From a modern perspective, a method for constructing such triples is a significant early achievement, known before only among the Greeks. At the same time, one should recall the tablet's author was a scribe, rather than a professional mathematician; it has been suggested that one of his goals may have been to produce examples for school problems.

1.a) Why are integers a, b, c satisfying $a^2 + b^2 = c^2$ called "Pythagorean triples"?

b) Is (3;4;5) a Pythagorean triple? Is (4;5;6) a Pythagorean triple?

c) Can you find at least three Pythagorean triples?

2) An exercise from the Plimpton 322 tablet:

$$c = x - \frac{1}{x} \quad , \quad v_1 = \frac{c}{2} \quad , \quad v_2 = v_1^2 \quad , \quad v_3 = 1 + v_2 \quad , \quad v_4 = \sqrt{v_3} \, .$$

Is the statement $x = v_4 + v_1$ true ?