Reserach Problem

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1   Pseudo-Pythagorian Triples

If a triangle has sides of length a, b, c and the angle between the edges a and b is 120^0 then $a^2 + b^2 + ab = c^2$.

We say that a triple of integers is *Pseudo-Pythagorian* if all are odd integers and are the sides of a 120^0 triangle (that is they satisfy the above relation).

Examples:

1.   3, 5, 7 : $3^2 + 5^2 + 3 \cdot 5 = 7^2$.

2.   7, 33, 37 : $7^2 + 33^2 + 7 \cdot 33 = 37^2$.

3.   11, 85, 91

4.   13, 35, 43

5.   17, 63, 73

Are Pseudo-Pythagorian triples.

Problem: is every odd prime number a member of a Pseudo-Pythagorian triple?