We know that wealth of Pythagorean triplets can be evaluated from statement that:

$$\Re(z)^2 + \Im(z)^2 = |z|^2, \ \ z = (a + bi)^2$$

Of cource, it's only wealth of them, but not all. We'll try to find it using that statement and if encounter that there's no such one, then we'll find it via program. Well, expanding we get:

$$\Re(z) = a^2 - b^2 \quad \Im(z) = 2ab$$

$$|z| = \sqrt{(a^2 - b^2)^2 + 4a^2b^2} = \sqrt{a^4 + 4a^2b^2 + b^4} = a^2 + b^2$$

Therefore:

$$|a^2 - b^2| + 2ab + a^2 + b^2 = 1000, \ \ a, b > 0$$

$a^2 - b^2 > 0$ when $a^2 > b^2$. I.e. $a > b$ for our domain.

As there's two such triplets (a + b = b + a) we suppose that when $a^2 - b^2 < 0$ it's just rearrangement of terms and we only need to evaluate for $a^2 - b^2 > 0$.

$$a^2 + ab = 500$$

$$a(a + b) = 250 \cdot 2 = 125 \cdot 4 = 100 \cdot 5 = 50 \cdot 10 = 25 \cdot 20$$

Give yourself a challenge to find (a, b). Well, (a, b) = (20, 5). We get that $a = 20^2 - 5^2 = 425$, $b = 2 \cdot 20 \cdot 5 = 200$, $c = 20^2 + 5^2 = 375$.

And the answer is 31875000.