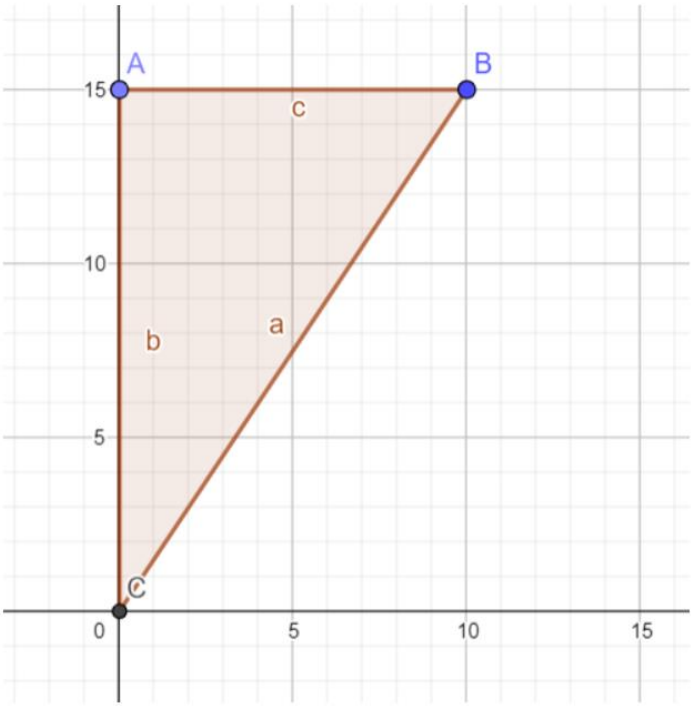
πRate Quiz - 2

Task 1: -

The orthocentre of a triangle is the point where the perpendicular drawn from the vertices to the opposite sides of the triangle intersect each other.

A triangle ABC right-angled at A is given. What is the sum of x and y coordinates of its orthocentre?



Remember the answer. It'll be used as input in the next part.

Task 2: -

You are overseeing the construction of a pyramid in Egypt. Let **Z** be the output of the previous question.

$$\varphi = \frac{1+\sqrt{5}}{2} = 1.6180339887\ldots$$

A Kepler triangle is a right triangle with edge lengths in a geometric progression. The ratio of the progression is $\sqrt{\varphi}$, where φ is the golden ratio, and can be written:

$$1 : \sqrt{\varphi} : \varphi$$

We define the viability of the pyramid based on the rounded value (to the nearest integer) of the given mathematical expression:

$$v = [f(Z)]^2 + A * LCM(6, Z) + [g(Z)]^2$$

Here, **A** is the area of a Kepler triangle with sides 1, √φ and φ and the functions f(x) and g(x) are defined below:

f(x) =

$$\sum_{k=0}^{\infty} \frac{(-1)^k}{(2k+1)!} x^{2k+1}$$

g(x) =

$$\sum_{k=0}^{\infty} \frac{(-1)^k x^{2k}}{(2k)!}$$

Print the value of viability v in whichever programming language you choose.

Note: Please use as precise values as possible