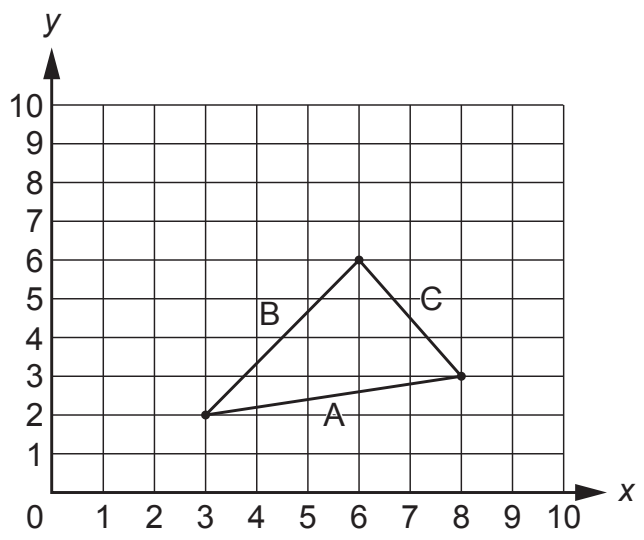
6 Three points on a grid form a triangle with sides of length A, B and C as shown in the example:



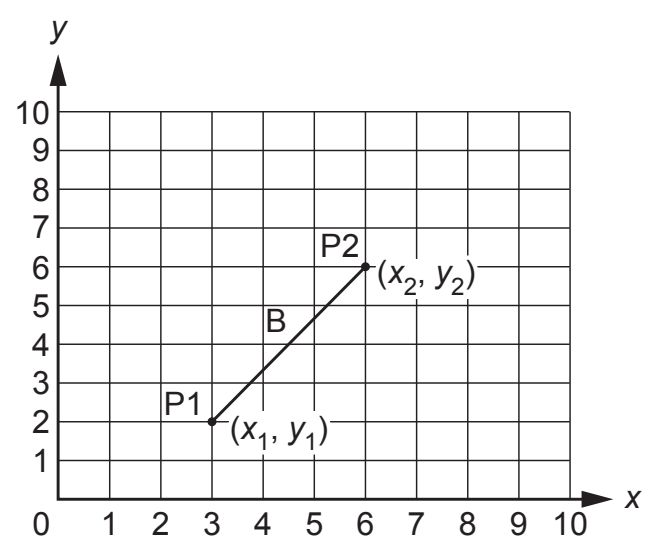
A triangle is said to be right-angled if the following test is true (where A is the length of the longest side):

$$A^2 = B^2 + C^2$$

A^2 means A multiplied by A, for example 3^2 means 3×3 which evaluates to 9

You can calculate A^2, B^2 and C^2 by using the coordinates of the endpoints of each line.

For example, B^2 is calculated as follows:



The endpoints, P1 and P2, have the coordinates (3, 2) and (6, 6).

The value B^2 is given by the formula:

$$B^2 = (x_1 - x_2)^2 + (y_1 - y_2)^2$$

In this example:

$$B^2 = (3 - 6)^2 + (2 - 6)^2$$
$$B^2 = (-3)^2 + (-4)^2$$
$$B^2 = 9 + 16$$
$$B^2 = 25$$

(a) A function `IsRA()` will:

- take three sets of integers as parameters representing the coordinates of the three endpoints that form a triangle
- return `TRUE` if the endpoints form a right-angled triangle, otherwise return `FALSE`.

In pseudocode, the operator '^' represents an exponent, which is the number of times a value is multiplied by itself. For example, the expression $Value^2$ may be written in pseudocode as `Value ^ 2`

Complete the pseudocode for the function `IsRA()`.

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FUNCTION IsRA(x1, y1, x2, y2, x3, y3 : INTEGER) RETURNS BOOLEAN
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ENDFUNCTION
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[6]

(b) The test used to check if a triangle is right-angled can be written in two ways:

$$A^2 = B^2 + C^2$$

or

$$A = \sqrt{(B^2 + C^2)}$$

The symbol √ represents the square root operation. For example, $\sqrt{81} = 9$

A new function `SQRT()` is written to perform the square root operation. The function takes an integer number as a parameter and returns a positive real value representing the square root of the number.

During testing it is found that the `SQRT()` function returns a value that is only accurate to 4 decimal places.

For example, `SQRT(25)` returns 5.0000125 rather than the correct value of 5.0

The function `IsRA()` from part **(a)** is modified to use the new `SQRT()` function to test if a triangle is right-angled.

Describe a problem that might occur when using the modified `IsRA()` function **and** suggest a solution that still allows the `SQRT()` function to be used.

Problem .....

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Solution .....

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[2]