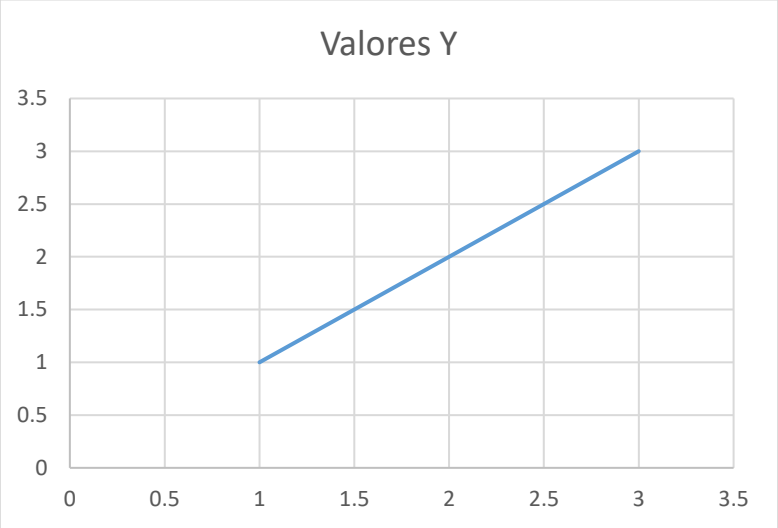
Mathematical model



If we have the coordinates X1,Y1(1,1) and X2, Y2 (3,3), we have to find the area of triangle rectangle that is composed for that straight line (it corresponds to the hypotenuse of that triangle)

Initially we need to project the coordinates x3,y3 in order to find base and height of the triangle rectangle

X3 = X2

Y3= Y1

Then we find:

- The distance between the point P1(x1,y1) and P3(x3,y3), this distance is the base
- The distance between the point P2(x2,y2) and P3(x3,y3), this distance is the height

For that we use this formule:

bajo la siguiente fórmula:

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

Finally we need to find the area:

$$A = \frac{b * h}{2}$$

Algorithm

Input (x1, y1, x2, y2): isTriangle

If isTriangle is true:

Project point 3, getCordinates (x2 , y1) : x3, y3

Find base, getDistance(x1, y1, x3, y3): distance

Find height, getDistance(x2, y2, x3, y3): distance

Find area, getArea(base, height): area

Show area, show(area)

Else:

Print “Those coordinates cannot form a triangle”

Input(x1,y1,x2,y2):isTriangle

isTriangle = true

If x1 = x2 or y1=y2

isTriangle=false

getCoordinates(x , y): x3,y3

x3=x

y3=y

getDistance(x1, y1, x2, y2):distance

x_member= x2 – x1

x_member=x_member * x_member

y_member= y2 – y1

y_member= y_member * y_member

distance=$\sqrt{x\_member + y\_member}$

getArea(base, height): area

area = (base * height)/2

show(area)

print “The area is” + area