Assinment 5

Swapnil Sirsat

January 2021

Question

Construct a triangle ΔPQR, PQ = 3, QR = 5.5 and $\angle$PQR = 60°

Answer

Given PQ = 3, QR = 5.5 and $\angle$PQR = 60°
now,
taking Q at (0,0) equation of line PQ

$$y = \sqrt{3}x$$

length of PQ = 3
therefore the point (x_1,y_1) on line y =$\sqrt{3}$ x which is 3 units from (0,0)

$$\sqrt{x_1^2 + y_1 2} = 3$$
$$x_1^2 + y_1 2 = 3^2$$
$$x_1^2 + 3x_1^2 = 9$$
$$4x_1^2 = 9$$
$$x_1^2 = \frac{9}{4}$$
$$x_1 = 1.5$$
$$\implies y = \sqrt{3}1.5$$

therefore P(1.5,$\sqrt{3}$1.5), Q(0,0), R(5.5,0) are the point for the triangle PQR

The following is the constructed figure

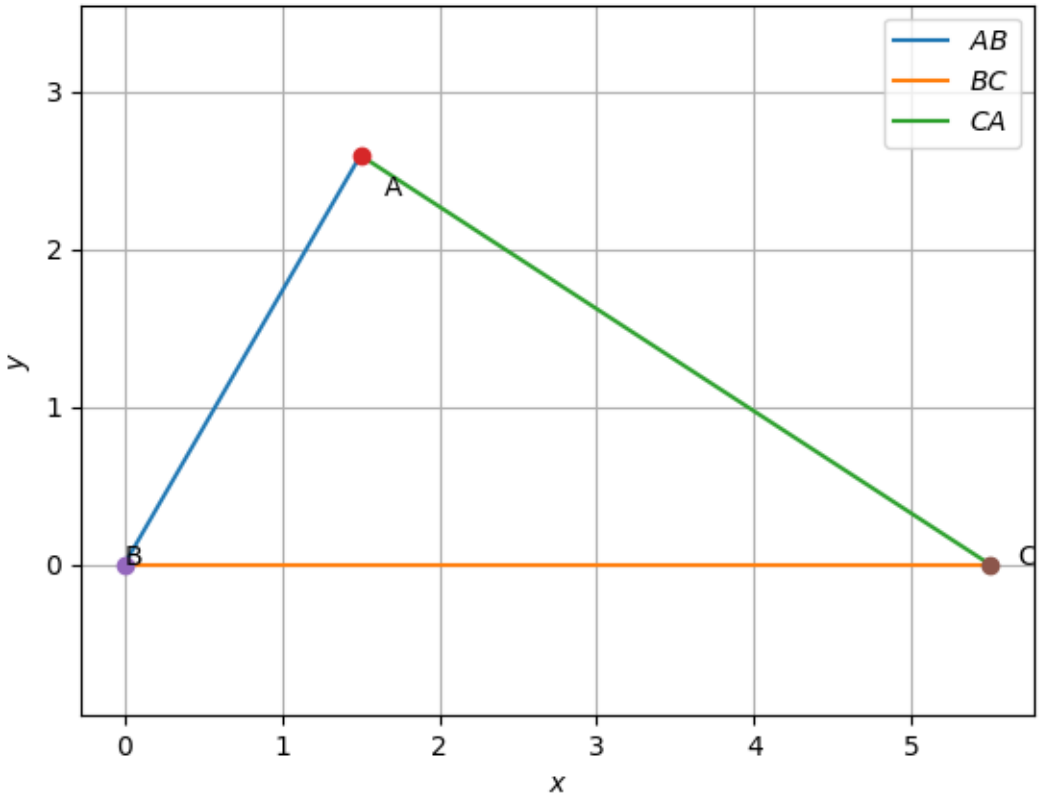

Figure 1: Output of python code

1 Question

Construct ΔABC given that $\angle$A $= 60°$, $\angle$B $= 30°$ and AB $= 5.8$.

2 Answer

Given,

$$\angle A = 60°$$
$$\angle B = 30°$$

Now, by angle sum property

$$\angle A + \angle B + \angle C = 180°$$
$$\implies \angle C = 90°$$

therefore ΔABC is a right angled triangle
Therefore,

$$\sin A = \frac{BC}{AB} = \frac{a}{5.8}$$
$$\implies a = 5.8 \sin(60)$$
$$\implies a = 5.02$$
$$\cos A = \frac{AC}{AB} = \frac{b}{5.8}$$
$$\implies b = 5.8 \cos(60) = 2.9$$

therefore

$$a = 5.02$$
$$b = 2.9$$
$$c = 5.8$$

Below is the constructed figure

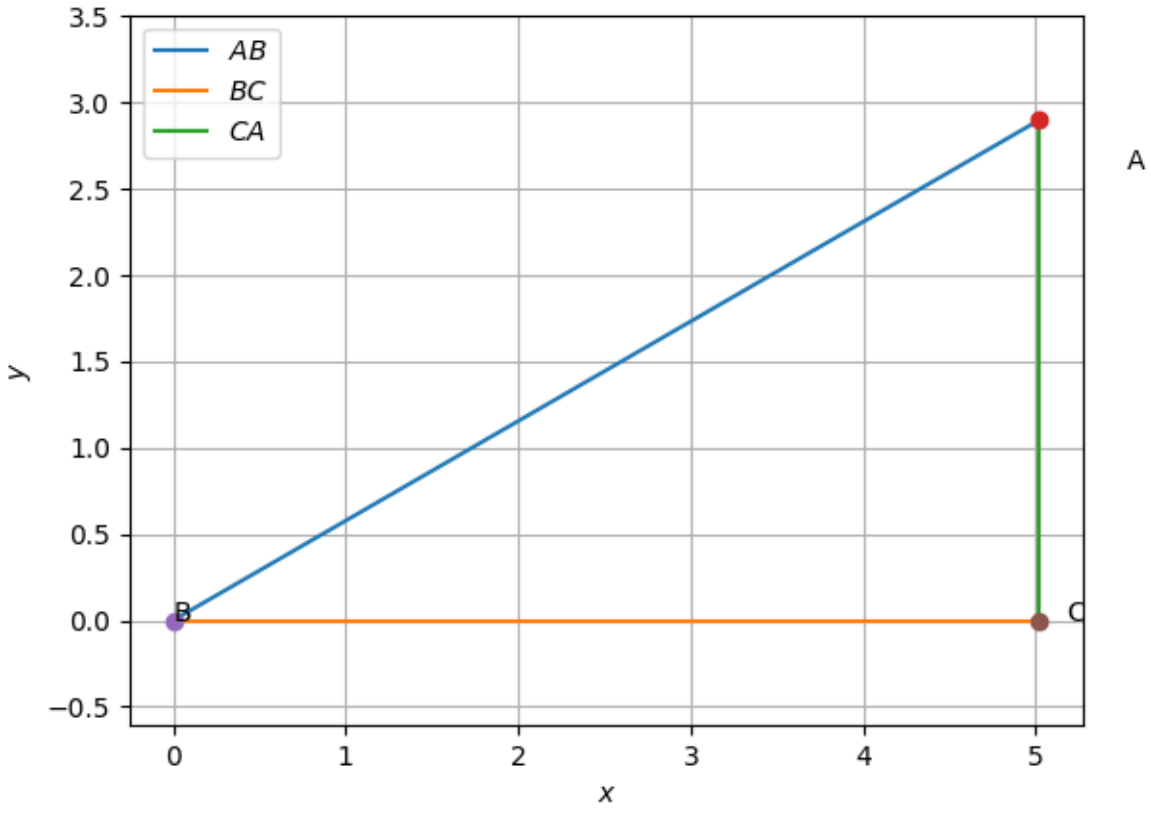

Figure 2: Caption