Assignment-4
Latex Report

Fuzayil Bin Afzal Mir

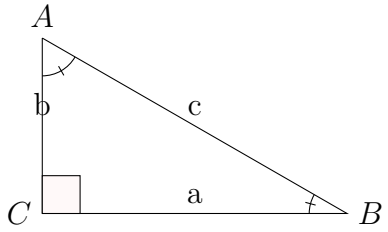
16/01/2021

- **Exercise 2.9**

1 Draw a △ABC, given that a+b+c=11, ∠B = 30° and ∠C = 90°

1.1 Solution

Figure of triangle ABC



It,s given that,

$$a + b + c = 11 \tag{1}$$

and,

$\angle B = 30°$ Now, $\text{Sin}(30°) = \frac{b}{c}$

$\frac{1}{2} = \frac{b}{c}$

therefore,

$$b = \frac{c}{2} \tag{2}$$

Also, $\text{Cos}(30°) = \frac{a}{c}$

$\frac{\sqrt{3}}{2} = \frac{a}{c}$

therefore,

$$a = \frac{c\sqrt{3}}{2} \tag{3}$$

Now substituting the values of b and a in the equation (1).
we get,

$$\frac{c\sqrt{3}}{2} + \frac{c}{2} + c = 11$$

$$\frac{c\sqrt{3} + c + 2c}{2} = 11$$

$$c\sqrt{3} + 3c = 22$$

$$c(3+\sqrt{3}) = 22$$

$$c= \frac{22}{3+\sqrt{3}}$$

$$c= \frac{22}{3+\sqrt{3}} * \frac{3-\sqrt{3}}{3-\sqrt{3}}$$

$$c= \frac{27.9}{6}$$

$$c = 4.65 \tag{4}$$

Now using value of c in equation(2) and equation(3)
we get,

$$a= \frac{4.65\sqrt{3}}{2}$$

$a = 4.03$
and,

$b = 2.32$

hence we got,

$\boxed{\text{a=4.03}}$

$\boxed{\text{b=2.32}}$

$\boxed{\text{c=4.65}}$

since sum of angles of a triangle is always equal to 180°

therefore in the given Triangle,

∠A+∠B+∠C=180°

∠A+30°+90°=180° [$\angle B = 30°$ and ∠C=90°–given]

∠A=180°-120°

$\boxed{\angle A = 60°}$

2 Steps Of Construction:

1) Draw a line AB equal to the length of c=4.65

2) With A as centre draw an arc of length of b=2.32

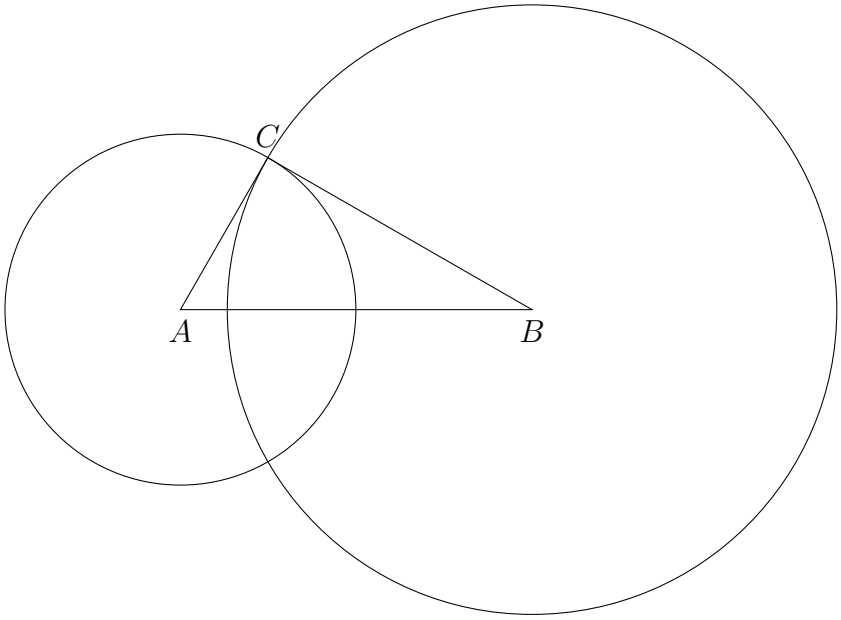
3) With B as centre draw an arc of length a=4.03

4) Mark the point as C where two arcs meet each other.

5) Join C to A and C to B.

6)Hence ABC is the required triangle.

2.1 Figure of Triangle ABC


C
A
B