DAY 5

1. **Evaluate:** [Ex 8.1, Q1]
   i) $\sin 60^0 . \cos 30^0 + \cos 60^0 . \sin 30^0$ ii) $2\tan^2 45^0 + \cos^2 30^0 - \sin^2 60^0$

Sol :- i) $\sin 60^0 . \cos 30^0 + \cos 60^0 . \sin 30^0 = \frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} + \frac{1}{2} \times \frac{1}{2} = \frac{3}{4} + \frac{1}{4} = \frac{3+1}{4} = \frac{4}{4} = 1$

   ii) $2\tan^2 45^0 + \cos^2 30^0 - \sin^2 60^0 = 2(1)^2 + \left(\frac{\sqrt{3}}{2}\right)^2 - \left(\frac{\sqrt{3}}{2}\right)^2 = 2$

2. **If n $(A - B) = \frac{1}{2}$, $\cos (A + B) = \frac{1}{2}$ then find A and B.** [Example 8]

Sol :- $\sin (A - B) = \frac{1}{2} = \sin 30^0 \quad \Rightarrow \quad A - B = 30^0 \ldots \ldots \ldots \ldots \ldots \ldots$ (i)

   and $\cos(A + B) = \frac{1}{2} = \cos 60^0 \quad \Rightarrow \quad A + B = 60^0 \ldots \ldots \ldots \ldots \ldots$ (ii)

   Adding (i) and (ii), we've

   $(A - B) + (A + B) = 30^0 + 60^0 \quad \Rightarrow \quad 2A = 90^0$

$\Rightarrow \quad \mathbf{A} = \frac{90^0}{2} = \mathbf{45^0}$ Put in (i), we get   come-become-educated

   i) $\Rightarrow \quad 45^0 - B = 30^0 \Rightarrow \quad \mathbf{B = 15^0}$

3. **If In ΔABC, $\angle B = 90^0$, AB = 5cm and $\angle ACB = 30^0$. Determine the length of sides BC and AC.** [Example 6]
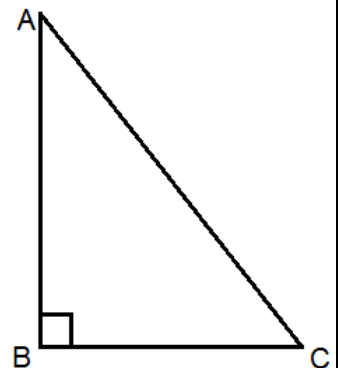
Sol :- $\frac{AB}{BC} = \frac{P}{B} = \tan C$

   $\Rightarrow \frac{5}{BC} = \tan 30^0 = \frac{1}{\sqrt{3}} \quad \Rightarrow BC = 5\sqrt{3}$ cm.

   To find the length of AC, we've

   $\frac{AB}{AC} = \frac{P}{H} = \sin C$

   $\Rightarrow \frac{5}{AC} = \sin 30^0 = \frac{1}{2} \quad \Rightarrow AC = 10$ cm.

EXERCISE

1. Ex 8.2