DATE 18/8/21

Introduction to Trigonometry

EX-8.1 :-

1. i) $\sin A = \frac{BC}{AC} = \frac{7}{25}$, $\cos A = \frac{AB}{AC} = \frac{24}{25}$

ii) $\sin C = \frac{AB}{AC} = \frac{24}{25}$, $\cos C = \frac{BC}{AC} = \frac{7}{25}$

2. $PR^2 = PQ^2 + QR^2$

$(13)^2 = (12)^2 + QR^2$

$QR^2 = (13)^2 - (12)^2 = 169 - 144 = 25$

$\therefore QR = \sqrt{25} = 5$

3. $\sin A = \frac{3}{4}$, $\cos A = \frac{\sqrt{7}}{4}$, $\tan A = \frac{3}{\sqrt{7}}$

4. $\cot A = \frac{8}{15}$

$AC^2 = AB^2 + BC^2$

$= (8)^2 + (15)^2$

$= 64 + 225 = 289$

$\therefore AC = \sqrt{289} = 17$

$\sin A = \frac{15}{17}$, $\sec A = \frac{17}{8}$

5. $\sec \theta = \frac{13}{12}$

$AC^2 = AB^2 + BC^2$

$(13)^2 = (12)^2 + BC^2$

$BC^2 = 169 - 144 = 25$ $\therefore BC = \sqrt{25} = 5$

$\sin\theta = \frac{5}{13}$, $\cos\theta = \frac{12}{13}$, $\tan\theta = \frac{5}{12}$, $\operatorname{cosec}\theta = \frac{13}{5}$, $\cot\theta = \frac{12}{5}$

6. $\cos A = \cos B$

$\frac{AB}{AB} = \frac{BC}{AB}$ $\quad \because AC = BC$

$\because \angle A = \angle B$

(Angles opp. to eq. sides are eq.)

7. i) $\frac{49}{64}$

ii) $\frac{49}{64}$

8. $\cot A = \frac{4}{3}$

$AC^2 = AB^2 + BC^2 = (4)^2 + (3)^2 = 16 + 9 = 25$

$\therefore AC = \sqrt{25} = 5$

$\frac{16}{25} - \frac{9}{25} = \frac{16}{25} - \frac{9}{25}$

$\therefore \frac{7}{25} = \frac{7}{25}$

$\therefore$ Hence, proved.

9. $\sin A = \frac{1}{2}$, $\cos A = \frac{\sqrt{3}}{2}$, $\sin C = \frac{\sqrt{3}}{2}$, $\cos C = \frac{1}{2}$

i) 1 $\left(\frac{1}{4} + \frac{3}{4} = \frac{4}{4} = 1\right)$

ii) 0 $\left(\frac{\sqrt{3}}{4} - \frac{\sqrt{3}}{4} = 0\right)$

10. $PR - QR = 1$ ---- (i)

$PR + QR = 25$ ---- (ii)

Adding eq (i) and (ii), we get

$2PR = 26$

$\therefore PR = \frac{26}{2} = 13\text{cm}.$

$QR = 12\text{cm}.$

$\sin P = \frac{12}{13}$, $\cos P = \frac{5}{13}$, $\tan P = \frac{12}{5}$

11. i) False, $\tan 60° = \sqrt{3} > 1$.

ii) True, $\sec A \geq 1$.

iii) False, Cos A is Cosine A.

iv) False, Cot A is single not product.

v) True, $-1 \leq \sin\theta \leq 1$.