Chapter Name : Trigonometry

1) Given that $\tan\theta = \frac{5}{12}$ and θ is an acute angle, find $\sin\theta$ and $\cos\theta$.

2) If $5\sin\theta = 3$, find the value of $\frac{\sec\theta - \tan\theta}{\sec\theta + \tan\theta}$.

3) If θ is an acute angle and $\sin\theta = \cos\theta$, find the value of $2\tan^2\theta + \sin^2\theta - 1$.

4) Prove the following: $\frac{\cos\theta}{\sin(90°-\theta)} + \frac{\sin\theta}{\cos(90°-\theta)} = 2$.

5) Prove that $\cos^2 30° + \sin 30° + \tan^2 45° = \frac{9}{4}$.

6) Without using trigonometrical tables, evaluate : $sin^2 34° + sin^2 56° + 2tan\ 18° tan\ 72° - cot^2 30°$.

7) Prove that $\frac{\cos(90-\theta)\sec(90-\theta)\tan\theta}{\text{cosec}(90-\theta)\sin(90-\theta)\cot(90-\theta)} + \frac{\tan(90-\theta)}{\cot\theta} = 2$.

8) If $\sin\theta = \frac{p}{q}$, find the value of $\sec\theta + \tan\theta$

9) If $a\cos A = 1$, $b\cot A = 1$, prove that $a^2 - b^2 = 1$

10) Prove that: $\frac{\tan 60° - \tan 30°}{1 + \tan 60° \tan 30°} = \tan 30°$

11) cosA= 5/13. Find the value of (sin A-cot A)/2tan A

12) Evaluate: $\frac{\cos 75°}{\sin 15°} + \frac{\sin 12°}{\cos 78°} - \frac{\cos 18°}{\sin 72°}$.

13) If 3θ is an acute angle, solve the following equation for : $2\sin 3\theta = \sqrt{3}$.

14) If $\tan\theta = \frac{5}{12}$, find the value of $\frac{\cos\theta + \sin\theta}{\cos\theta - \sin\theta}$.

15) Find the value of :

$$\frac{\sec 29°}{\text{cosec}\,61°} + 2\cot 8°\cot 17°\cot 45°\cot 73°\cot 82° - 3(\sin^2 38° + \sin^2 52°)$$

16) Simplify the following : $\frac{\text{cosec}\,(90°-\theta)\sin(90°-\theta)\cot(90°-\theta)}{\cos(90°-\theta)\sec(90°-\theta)\tan\theta} + \frac{\cot\theta}{\tan(90°-\theta)}$.

17) If $\sin\theta + \text{cosec}\,\theta = 2$, find the value of $\sin^2\theta + \text{cosec}^2\theta$.

18) If $\sin\theta + \text{cosec}\,\theta = 2$, find the value of $\sin^5\theta + \text{cosec}^5\theta$.

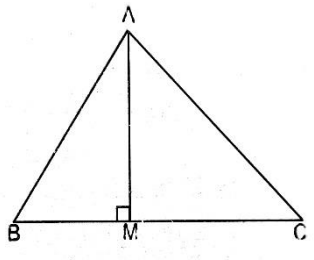
19) Taking $A = 30°$ verify that $\cos^4 A - \sin^4 A = \cos 2A$

20) If $\sin A = \frac{1}{3}$, evaluate $\cos A\,\text{cosec}\,A + \tan A\sec A$.

21) Find the value of x if $\cos x = \cos 60°\cos 30° + \sin 60°\sin 30°$.

22) If A + B = 90°, prove that $\sqrt{\frac{\tan A\tan B + \tan A\cot B}{\sin A\sec B} - \frac{\sin^2 B}{\cos^2 A}} = \tan A$.

23) In the adjoining figure, AM is perpendicular to BC.
If $\tan B = \frac{3}{4}$, $\tan C = \frac{5}{12}$ and BC = 56 cm, calculate the length of AM.



24) Given $4\sin A = 3\cos A$, find the value of : **(i)** $\sin A$ **(ii)** $\cot^2 A - \text{cosec}^2 A$.