



MATHEMATICS
CH: 8 – TRIGONOMETRY – WORK SHEET

Name: _____

Date: 16/10/24

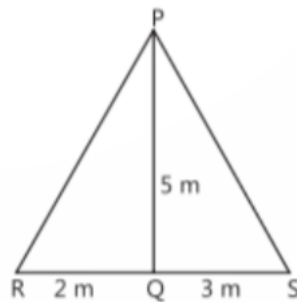
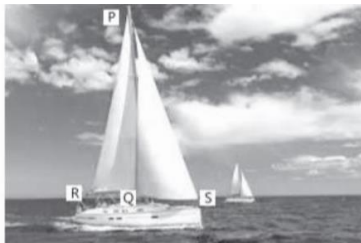
Class: X Sec:

- $7\sec^2x - 7\tan^2x$ equal to
a) 7 b) -7 c) -1 d) 1
- $5\cot^2x - 5\operatorname{cosec}^2x$ equal to
a) 5 b) -5 c) -1 d) 1
- $3\sin^2x - 3\cos^2x$ equal to
a) 3 b) -3 c) -1 d) none of these
- $\sin 3x = 1$, then value of x is
a) 90° b) 60° c) 45° d) 30°
- If $5 \sin\theta = 3$, evaluate $\frac{\cos\theta - \tan\theta}{\sec\theta + \cot\theta}$.
- ΔABC is right angled at C. AC = 5 cm and AB = 13 cm. Evaluate $\sin A \cos B + \cos A \sin B$
- If $4\tan x = 3$, evaluate $\frac{4\sin x - \cos x + 1}{4\sin x + \cos x - 1}$.
- Evaluate $\frac{\tan^2 60^\circ + 4\sin^2 45^\circ + 3\sec^2 30^\circ + 5\cos^2 90^\circ}{\operatorname{cosec} 30^\circ + \sec 60^\circ - \cot^2 30^\circ}$
- Evaluate $4(\sin^4 30^\circ + \cos^4 60^\circ) - 3(\cos^2 45^\circ - \sin^2 90^\circ)$
- $3\sin 30^\circ - x\cos 60^\circ + \tan 45^\circ = 1$, find x.
- If $\sin(A+B) = \sqrt{3}/2$ and $\cos(A-B) = \sqrt{3}/2$, find the values of A and B.
- Prove the following :
 - $(\sin x + \operatorname{cosec} x)^2 + (\cos x + \sec x)^2 = 7 + \tan^2 x + \cot^2 x$.
 - $\frac{\sin A - 2\sin^3 A}{2\cos^3 A - \cos A} = \tan A$
 - $\frac{\tan A}{\sec A - 1} + \frac{\tan A}{\sec A + 1} = 2\operatorname{cosec} A$
 - $\frac{\cos A}{1 + \sin A} + \frac{1 + \sin A}{\cos A} = 2 \sec A$
 - $(\operatorname{cosec} x - \sin x) \cdot (\sec x - \cos x) = \frac{1}{\tan x + \cot x}$
 - $(\sec x - \tan x)^2 = \frac{1 - \sin x}{1 + \sin x}$.
- If $\operatorname{cosec} x + \cot x = p$, find the value of $\operatorname{cosec} x - \cot x$.



- 14. If $7\sin^2x + 3\cos^2x = 4$, find the value of $\tan x$.
- 15. If $\cos x - \sin x = \sqrt{2}\sin x$, prove that $\cos x + \sin x = \sqrt{2}\cos x$.
- 16. If $7x = \operatorname{cosec} \alpha$ and $7/x = \cot \alpha$, find the value of $x^2 - \frac{1}{x^2}$.
- 17. ΔABC is right angled at B. $AC = 10 \text{ cm}$, $AB + BC = 14$. Find $\sin A + \tan C$.
- 18. If $\operatorname{cosec} A + \cot A = m$, show that $\frac{m^2 - 1}{m^2 + 1} = \cos A$.
- 19. If $\sec A = x + \frac{1}{4x}$, prove that $\sec A + \tan A = 2x$.
- 20. If $\tan x + \cot x = 2$, find the value of $\sqrt{\tan^2 x + \cot^2 x}$.
- 21. Assertion: The value of $\sec^2 10^\circ - \cot^2 80^\circ$ is 1.
Reason: The value of $\sin 30^\circ = \frac{1}{2}$.
- 22. Assertion: $\sin^2 67^\circ + \cos^2 67^\circ = 1$.
Reason: for any value of θ , $\sin^2 \theta + \cos^2 \theta = 1$.
- 23. Assertion: If $\cos A + \cos^2 A = 1$, then $\sin^2 A + \sin^4 A = 2$.
Reason: $1 - \sin^2 A = \cos^2 A$, for any value of A.
- 24. Assertion: In a right angled triangle, if $\cos \theta = \frac{1}{2}$ and $\sin \theta = \frac{\sqrt{3}}{2}$, then $\tan \theta = \sqrt{3}$.
Reason: $\tan \theta = \frac{\sin \theta}{\cos \theta}$.
- 25. **CASE STUDY :**

A sailing boat with triangular masts is shown below. Two right triangles can be observed triangles PQR and PQS, both right-angled at Q. The distance QR=2m and QS=3m and height PQ=5m.



Based on the above information, solve the following questions:

- i) The value of $\sec S$ is _____
- ii) The value of $\operatorname{cosec} R$ is _____
- iii) The value of $\tan S + \cot R$ is _____
- iv) The value of $\sin^2 R - \cos^2 R$ is _____
- v) The value of $\sin^2 R + \cos^2 R$ is _____