INDIAN SCHOOL NIZWA

MATHEMATICS
CH: 8 – TRIGONOMETRY – WORK SHEET

Name: _____ Date: 16/10/24 Class: X Sec:

1. $7sec^2x - 7tan^2x$ equal to
   a) 7 b) -7 c) -1 d) 1

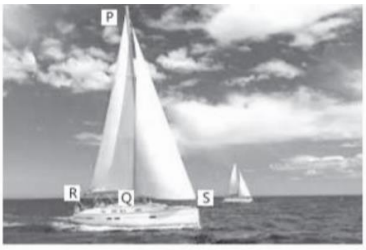
2. $5cot^2x - 5cosec^2x$ equal to
   a) 5 b) -5 c)-1 d) 1
3. $3sin^2x - 3cos^2x$ equal to
   a) 3 b) -3 c) -1 d) none of these

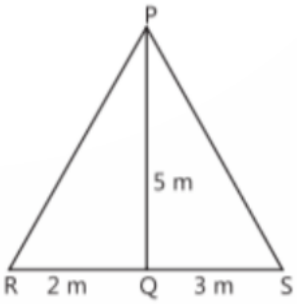
4. sin3x = 1, then value of x is
   a) 90^0 b) 60^0 c) 45^0 d) 30^0

5. $If\ 5\ sin\theta = 3, evaluate\ \frac{cos\theta - tan\theta}{sec\theta + cot\theta}$.
6. ΔABC is right angled at C. AC = 5 cm and AB= 13 cm. Evaluate $sinAcosB\ +\ cosA\ sinB$
7. $If\ 4tanx = 3, evaluate\ \frac{4sinx - cosx + 1}{4sinx + cosx - 1}$.
8. Evaluate $\frac{tan^2 60 + 4sin^2 45 + 3sec^2 30 + 5cos^2 90}{cosec30 + sec60 - cot^2 30}$
9. Evaluate $4(sin^4 30^0 + cos^4 60^0) - 3(cos^2 45^0 - sin^2 90^0)$
10. $3sin30^0$ – $xcos60^0$ + $tan45^0$ = 1, find x.
11. If sin(A+B) = $\sqrt{3}/2$ and cos (A-B) = $\sqrt{3}/2$, find the values of A and B.
12. Prove the following :
    a)$(sinx + cosecx)^2 + (cosx + secx)^2 = 7 + tan^2x + cot^2x$.
    b)$\frac{sinA - 2sin^3A}{2cos^3A - cosA} = tanA$
    c)$\frac{tanA}{secA - 1} + \frac{tanA}{scA + 1} = 2cosecA$
    d)$\frac{cosA}{1 + sinA} + \frac{1 + sinA}{cosA} = 2\ secA$
    e)$(cosecx - sinx).(secx - cosx) = \frac{1}{tanx + cotx}$
    f)$(secx - tanx)^2 = \frac{1 - sinx}{1 + sinx}$.

13. If $cosecx\ + cotx\ =\ p$, find the value of $cosecx - cotx$.

14. $If\ 7sin^2x + 3cos^2x$=4, find the value of tanx.
15. If $cosx - sinx = \sqrt{2}sinx$, prove that $cosx + sinx = \sqrt{2}cosx$.
16. If $7x = coseca\ and\ 7/x = cota$, find the value of $x^2 - \frac{1}{x^2}$
17. Δ ABC is right angled at B. $AC = 10\ cm,\ AB + BC = 14$. Find $sinA + tanC$.
18. $If\ cosecA + cotA = m, show\ that\ \frac{m^2-1}{m^2+1} = cosA.$
19. $If\ secA = x + \frac{1}{4x}, prove\ that\ secA + tanA = 2x$
20. $If tanx + cotx = 2, find\ the\ value\ of\ \sqrt{tan^2x + cot^2x}.$
21. Assertion: The value of $sec^2 10^0$-$cot^2 80^0$ is 1.
    Reason: The value of $\sin 30^0$= ½.
22. Assertion: $\sin^2 67^0 + \cos^2 67^0 = 1$.
    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.





Baed on the above information, solve the following questions:

i) The value of secS is _____
ii) The value of cosecR is _____
iii) The value of $tanS + cotR$ is _____
iv) The value of $\sin^2 R - \cos^2 R$ is _____
v) The value of $\sin^2 R + \cos^2 R$ is _____