

Q1. In a triangle ABC, right angled at B, if $\tan A = \frac{1}{\sqrt{3}}$, find the value of :

(i) $\sin A \cos C + \cos A \sin C$

Ans. 1

(ii) $\cos A \cos C - \sin A \sin C$

Ans. 0

Q2. In a triangle ABC, right angled at C, if $\tan A = \frac{1}{\sqrt{3}}$, find the value of :

(i) $\sin A \cos B + \cos A \sin B$

Ans. 1

Q3. In a triangle ABC, right angled at A, if $\tan C = \sqrt{3}$, find the value of :

(i) $\sin B \cos C + \cos B \sin C$

Ans. 1

Q4. If $\operatorname{Cosec} A = \sqrt{10}$, find the value of $\cos A$.

Ans. $\frac{3}{\sqrt{10}}$

Q5. If $\cot A = 2$, find the value of $\operatorname{cosec}^2 A + \cot^2 A$.

Ans. 9

Q6. In triangle PQR, if $\angle Q = 90^\circ$ and $\sin R = \frac{3}{5}$, then find the value of $\cos P$.

Ans. $\frac{3}{5}$

Q7. If $5 \sin P = 12 \cos P$, then find the value of $\sec P$.

Ans. $\frac{13}{5}$

Q8. If $4 \sin \theta = 3 \cos \theta$, find the value of $\frac{12 \sin \theta - 7 \cos \theta}{8 \sin \theta + 3 \cos \theta}$.

Ans. $\frac{2}{9}$

Q9. If $\sqrt{3} \sin \theta = \cos \theta$, find the value of $\frac{\sin \theta \tan \theta (1 + \cot \theta)}{\sin \theta + \cos \theta}$.

Ans. $\frac{1}{\sqrt{3}}$

Q10. If $\sin \theta : \cos \theta = 12 : 13$, find $\tan \theta$, $\sin \theta$ and $\cos \theta$.

Ans. $\frac{12}{13}, \frac{12}{\sqrt{313}}, \frac{13}{\sqrt{313}}$

Q11. If $\sin \theta + \cos \theta = \sqrt{2} \cos \theta$, find the value of $\cot \theta$.

Ans. $\sqrt{2} + 1$

Q12. In triangle PQR, right-angled at Q, $PR + QR = 25$ cm and $PQ = 5$ cm. Determine the values of

$\sin P$, $\cos P$ and $\tan P$.

Ans. $\frac{12}{13}, \frac{5}{13}, \frac{12}{5}$

Q13. In a triangle OPQ, right-angled at P, $OP = 7$ cm and $OQ - PQ = 1$ cm. Determine the values of

$\sin Q$ and $\cos Q$.

Ans. $\frac{7}{25}, \frac{24}{25}$

Q14. In a triangle ABC, right-angled at B, $BC = 7$ cm and $AC - AB = 1$ cm. Find the value of $\cos A - \sin A$.

Ans. $\frac{17}{25}$

Q15. In a right triangle ABC, right-angled at B, if $\tan A = 1$, then verify that $2 \sin A \cos A = 1$.

Q16. If $\sec \alpha = \frac{5}{4}$, verify that $\frac{\tan \alpha}{1 + \tan^2 \alpha} = \frac{\sin \alpha}{\sec \alpha}$.

Q17. If $3 \tan A = 4$, prove that $\sqrt{\frac{\sec A - \operatorname{cosec} A}{\sec A + \operatorname{cosec} A}} = \frac{1}{\sqrt{7}}$.

Q18. If $5 \sin \theta = 4$, prove that $\frac{1}{\cos \theta} + \frac{1}{\cot \theta} = 3$.

Q19. If $4 \tan \theta = 3$, evaluate $\left(\frac{4 \sin \theta - \cos \theta + 1}{4 \sin \theta + \cos \theta - 1} \right)$.

Ans. $\frac{13}{11}$

Q20. Given that $\tan A = \frac{3}{4}$, show that $\frac{\cos^2 A - \sin^2 A}{\cos A} = \frac{1 - \tan^2 A}{\sec A}$.

