MATHS

BOOKS - CHHAYA PUBLICATION MATHS (BENGALI ENGLISH)

TRIGONOMETRIC RATIOS [OR FUNCTIONS] OF POSITIVE ACUTE ANGLES

Example

1. Prove that, $\sec^2\theta + \cos ec^2\theta = \sec^2\theta \cdot \text{cosec}^2\theta.$

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2. prove that, $\sqrt{\frac{\sec\theta - 1}{\sec\theta + 1}} = \text{cosec}\theta - \cot\theta.$

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3. Show that,

$$\frac{1}{\text{cosec} - \cot\alpha} - \frac{1}{\sin\alpha} = \frac{1}{\sin\alpha} - \frac{1}{\text{cosec}\alpha + \cot\alpha}.$$

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4. Prove that, $\frac{\cos A}{1+\sin A} = \frac{1+\cos A - \sin A}{1+\cos A + \sin A}$

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5. $\frac{\cot\alpha + \text{cosec}\alpha - 1}{\cot\alpha - \text{cosec}\alpha + 1} = \frac{1+\cos\alpha}{\sin\alpha}$

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6. Show that, $\left(\frac{1-\tan\theta}{1-\cot\theta}\right)^2 = \frac{1+\tan^2\theta}{1+\cot^2\theta}.$

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7. Simplify $\frac{\sin\alpha + \sin\beta}{\cos\alpha - \cos\beta} + \frac{\cos\alpha + \cos\beta}{\sin\alpha - \sin\beta}$

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8. Solve : $2\cos\theta + 2\sqrt{2} = 3\sec\theta[0^\circ \leq \theta \leq 90^\circ]$

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9. If $\sin^4 x + \sin^2 x = 1$ show that, $\cot^4 x + \cot^2 x = 1$

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10. If $\sin\theta + \text{cosec}\theta = 2$then prove that, $\sin^7\theta + \text{cosec}^7\theta = 2$

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11. If θ positive acute angle and $\sec\theta = \frac{17}{8}$, find cosec θ.

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12. If $\sin\theta - \cos\theta = \sqrt{2}\cos\theta$, show that

$\sin\theta + \cos\theta = \sqrt{2}\sin\theta\left(0 < \theta < \frac{\pi}{2}\right)$.

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13. If $\cos^2\alpha = \sin^3\alpha$ then show that $\tan^6\alpha - \tan^2\alpha = 1$

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14. Each angle A, B,C of the triangle ABC is acute and sin (B+C-A)=1 , tan (C+A-B)=$\sqrt{3}$, find A,B and C.

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15. If θ positive acute angle and $\tan\theta + \sec\theta = \frac{2}{\sqrt{3}}$ find $\sin\theta$

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16. If $1+\sin^2 A = 3\sin A\cos A,$ find the values of of tan A .

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17. if $a\sin\phi - b\cos\phi$

show that, $a\cos\phi + b\sin\phi = \pm\sqrt{a^2+b^2-c^2}$

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18. if $(1+\cos\alpha)(1+\cos\beta)(1+\cos\gamma) = (1-\cos\alpha)$

$(1-\cos\beta)(1-\cos\gamma)$ then show that each side= $\pm\sin\alpha\sin\beta\sin\gamma$

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19. if $u_n = \cos^n\alpha + \sin^n\alpha$ show that, $2u_6 - 3u_4 + 1 = 0$

A. `

B.

C.

D.

Answer: $= 2 - 6\cos^2\alpha - 3 + 6\cos^2\alpha\sin^2\alpha + 1 = 0$

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20. if $\tan\theta = \dfrac{\sin\alpha - \cos\alpha}{\sin\alpha + \cos\alpha}$ show that, $\sin\alpha + \cos\alpha = \pm\sqrt{2}\cos\theta$

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21. If x and y are unequal real positive numbers , does the relation $\sec\theta = \dfrac{2xy}{x^2 + y^2}$ hold ? Give your argument .

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22. If $a \neq 1$ be a real positive number , can the relation $\sin\theta = a + \frac{1}{a}$ be true ? Give reasons.

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23. If $\sec\theta = \frac{2xy}{(x+y)^2}$ show that, $x^2 + y^2 = 1$ $(\sin\alpha\cos\alpha \neq 0)$

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24. If $2y\cos\theta = x\sin\theta$ and $2x\sec\theta - y\cos ec\theta = 3$ show that $x^2 + 4y^2 = 4$

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25. Find the minimum value of $\cos^2\theta + \sec^2\theta$.

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26. Can the relation $\cos\theta = \frac{x^2+y^2+z^2}{xy+yz+zx}$ be true for three unequal positive real numbers x,y,z,? Justify your answer.

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27. If $\frac{\sin^4\alpha}{a} + \frac{\cos^4\alpha}{b} = \frac{1}{a+b}$ show that, $\frac{\sin^8\alpha}{a^3} + \frac{\cos^8\alpha}{b^3} = \frac{1}{(a+b)^3}$

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28. Eliminte α and β :

$a\sin\alpha = b\sin\beta, a\cos^2\alpha + b\cos^2\beta = 1, a\cot^2\alpha + b\cot^2\beta = 1$

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29. If $\tan\theta = \frac{a}{b}$, find the value of $\frac{\sin\theta}{\cos^8\theta} + \frac{\cos\theta}{\sin^8\theta}$

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30. Eliminate θ between

$\tan\theta - \cot\theta = a$ and $\cos\theta + \sin\theta = b$

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31. Eliminate θ between

$x\sin\theta - y\cos\theta = \sqrt{x^2 + y^2}$ and $\frac{\cos^2\theta}{a^2} + \frac{\sin^2\theta}{b^2} = \frac{1}{x^2 + y^2}$.

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32. If $\left(a^2 - b^2\right)\sin\theta + 2ab\cos\theta = a^2 + b^2$, find $\tan\theta$.

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33. If $m^2 + m'^2 + 2mn'\cos\theta = 1$

$n^2 + n'^2 + 2nn'\cos\theta = 1$ and $mn + m'n' + (mn' + m'n)\cos\theta = 0$

then show that $m^2 + n^2 = m'^2 + n'^2 = \cos ec^2\theta$.

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34. If $a > b > 0$ then show that the minimum value of $(a\sec\theta - b\tan\theta) is \sqrt{a^2 - b^2}$.

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35. Find the principal value of $\cos ec^{-1}(-\sqrt{2})$

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36. Find the principal value of $\sec^{-1}\left(\frac{2}{\sqrt{3}}\right)$

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37. Show that the expression $\cos es\theta(\cos\theta + 3)$ has no value between $(-2\sqrt{2})$ and $2\sqrt{2}$.

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Exercise 2

1. $\sec^2 A - \tan^2 A =$

A. 0

B. 1

C. 2

D. none of these

Answer: B

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2. tan A . cos A=

A. 0

B. 1

C. cot A

D. sin A

Answer: D

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3. If θ is a positive acute then the value of $\sec\theta$ cannot be

A. greater than 1

B. less than 1

C. equals to 1

D. 0

Answer: B

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4. If θ a positive acute angle then the value of θ satisfies the equation $\sqrt{3}\sin\theta - \cos\theta = 0$ is

A. $\frac{\pi}{2}$

B. $\frac{\pi}{3}$

C. $\frac{\pi}{6}$

D. $\frac{\pi}{8}$

Answer: C

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5. The minimum value of $\sec^2\alpha + \cos^2\alpha$ is

A. 0

B. 1

C. 2

D. $-\infty$

Answer: C

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6. The minimum value of $\sin\theta.\cos\theta$ is

A. $\frac{1}{2}$

B. 1

C. 2

D. ∞

Answer: A

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7. If $0 < \theta < 90^\circ$ then minimum value of $9\tan^2\theta + 4\cot^2\theta$ is

A. 11

B. 12

C. 13

D. 14

Answer: B

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8. If $\sin\alpha = \frac{4}{5}$ where α is a positive acute angle then cos α=

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

B. $-\frac{3}{5}$

C. $\pm\frac{3}{5}$

D. none of these

Answer: C

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9. If $x = \sin^2 \alpha + \cos ec^2 \alpha$, state which of the following is true?

A. $0 < x \leq 1$

B. $\leq x < 2$

C. $x \geq 2$

D. $x = 1.5$

Answer: C

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10. If $\tan\theta = \frac{a}{b}$,then which of the following is the value of $\frac{a\sin\theta + b\cos\theta}{a\sin\theta - b\cos\theta}$?

A. $\frac{a^2 + b^2}{a^2 - b^2}$

B. $\frac{a}{\sqrt{a^2 - b^2}}$

C. $\frac{b}{a^2 - b^2}$

D. $\sqrt{a^2 + b^2}$

Answer: A

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11. If $0^\circ \leq A \leq 90^\circ$ and sin A =cosA , state which of the following is the value of A ?

A. 0°

B. 30°

C. 45°

D. 60°

Answer: C

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12. State which of the following relation is true?

A. $\cos\theta = \frac{7}{5}$

B. $\sin\theta = \frac{a^2 + b^2}{a^2 - b^2}(a \neq \pm b)$

C. $\tan\theta = 45$

D. $\sec\theta = \frac{4}{5}$

Answer: C

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13. Prove the following identities:

sin A cos A (tanA+cotA)=1

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14. Prove the following identities:

$$\sin\alpha\cos\alpha(\tan\alpha - \cot\alpha) = 2\sin^2\alpha - 1$$

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15. Prove the following identities:

$$\sqrt{\frac{1+\sin\theta}{1-\sin\theta}} = \sec\theta + \tan\theta$$

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16. Prove the following identities:

$$\sqrt{\frac{\cos ec\theta - 1}{\cos ec + 1}} = \frac{1-\sin\theta}{\cos\theta}$$

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17. Prove the following identities:

$$\frac{\cos\phi}{1+\sin\phi}+\frac{1+\sin\phi}{\cos\phi}=2\sec\phi$$

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18. Prove the following identities:

$$(\cos ec\theta-\sin\theta)^2+(\sec\theta-\cos\theta)^2-(\tan\theta-\cot\theta)^2=1$$

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19. Prove the following identities:

$$(\cot\theta+\cos ec\theta)^2=\frac{1+\cos\theta}{1-\cos\theta}$$

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20. Prove the following identities:

$$\frac{1+\sin\theta}{1-\sin\theta} = (\sec\theta + \tan\theta)^2$$

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21. Prove the following identities:

$$(\sin\alpha + \cos ec\alpha)^2 + (\cos\alpha + \sec\alpha)^2 = \tan^2\alpha + \cot^2\alpha + 7$$

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22. Prove the following identities:

$$(1 + \sec A + \tan A)(1 - \cos ecA + \cot A) = 2$$

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23. prove: $\dfrac{(\sin 0^\circ + \sin 60^\circ)(\cos 60^\circ + \cot 45^\circ)}{(\cot 60^\circ + \tan 30^\circ)(\cos ec30^\circ - \cos ec90^\circ)} = \dfrac{9}{8}$

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24. prove: $\cos^2 60^\circ$, $\cos^2 45^\circ$, $\cos^2 30^\circ$ are in A.P

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25. prove: $\tan\left(\frac{\pi}{3}\right), \tan\left(\frac{\pi}{4}\right), \tan\left(\frac{\pi}{6}\right)$ are in G.P

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26. prove: $2\cos^2\left(\frac{\pi}{3}\right) + \frac{3}{4}\sec^2\left(\frac{\pi}{4}\right) + 4\sin^2\left(\frac{\pi}{6}\right) = \cot^2\left(\frac{\pi}{6}\right)$

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27. The angle A of the triangle ABC is obtuse, if sec(B+C)=cosec (B-C)=2,find the angles.

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28. If θ is a positive acute angle and

$\tan\theta = \frac{3}{4}$, find $\sin\theta$ and $\sec\theta$

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29. If θ is a positive acute angle and

$\sec\theta = \frac{m^2+1}{2m}$ find $\tan\theta$ and $\cos ec\theta$

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30. If θ is a positive acute angle and

$\cos\theta = \frac{15}{17}$, find the values of the other trigonometric ratios.

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31. If A and B are positive acute angles and sinA $= \frac{3}{5}$, $\cos B = \frac{15}{17}$, find the value of $\frac{\tan A - \tan B}{1 + \tan A \tan B}$.

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32. If $\tan\theta = \frac{a}{b}$, find the value of $\frac{b\cos\theta - a\sin\theta}{b\cos\theta + a\sin\theta}$.

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33. If $\cos\theta + \sec\theta = \sqrt{3}$, show that, $\cos^3\theta + \sec^3\theta = 0$.

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34. Express $1 + 4\cos ec^2\alpha\cot^2\alpha$ in the form of a perfect square.

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35. If $3\cos\alpha - 4\sin\alpha = 5$, show that, $3\sin\alpha + 4\cos\alpha = 0$.

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36. If $\sin\alpha = x$ and $\tan\alpha = y$, prove that, $\frac{1}{x^2} - \frac{1}{y^2} = 1.$

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37. If $\tan\alpha + \cot\alpha = 2$, show that, $\tan^7\alpha + \cot^7\alpha = 2.$

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38. If $a_n = \sin^n\theta + \cos ec^n\theta$ and $a_1 = 2$ prove that, $a_n = 2$.

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39. If $\cos\alpha + \sec\alpha = 2$, show that $\cos^3\alpha + \sec^3\alpha = 2.$

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40. If $x = r\cos\theta\cos\phi, y = r\cos\theta\sin\phi$ and $z = r\sin\theta,$ show that , $x^2 + y^2 + z^2 = r^2$

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41. If $x = a\sec\theta\cos\phi, y = b\sec\theta\sin\phi$ and $z = c\tan\theta,$ show that, $\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2} = 1$

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42. If x=$\cos ec\theta - \sin\theta$ and $y = \sec\theta - \cos\theta,$ then show that $x^{2/3} + y^{2/3} = (xy)^{-2/3}$

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43. Prove the following identities:

$$\frac{\sec\theta - \tan\theta + 1}{\sec\theta + \tan\theta + 1} = \frac{1 - \sin\theta}{\cos\theta}$$

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44. Prove the following identities:

$$\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = \frac{1 + \sin\theta}{\cos\theta}$$

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45. Prove the following identities:

$$\frac{1}{\sec A - \tan A} - \frac{1}{\cos A} = \frac{1}{\cos A} - \frac{1}{\sec A + \tan A}$$

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46. Prove the following identities:

$$(1 - \sin\alpha + \cos\alpha)^2 = 2(1 + \cos\alpha)(1 - \sin\alpha)$$

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47. Prove the following identities:

$$\cos^8 A - \sin^8 A = \left(1 - 2\sin^2 A \cos^2 A\right)\left(1 - 2\sin^2 A\right)$$

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48. Prove the following identities:

$$\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} - \cos ec\theta = \cos ec\theta - \sqrt{\frac{1+\cos\theta}{1-\cos\theta}}$$

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49. Prove the following identities:

$$\cot^2\alpha\frac{\sec\alpha - 1}{1+\sin\alpha} + \sec^2\alpha\frac{\sin\alpha - 1}{\sec\alpha + 1} = 0$$

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50. Prove the following identities:

$$(\cos\alpha\cos\beta + \sin\alpha\sin\beta)^2 + (\sin\alpha\cos\beta - \cos\alpha\sin\beta)^2 = 1$$

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51. Solve : $(0^\circ \leq \theta \leq 90^\circ)$:

$\tan\theta + \cot\theta = 2$

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52. Solve : $(0^\circ \leq \theta \leq 90^\circ)$:

$2\cos^2\theta + 5\sin\theta = 4$

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53. Solve : $(0^\circ \leq \theta \leq 90^\circ)$:

$\tan^2\theta - (\sqrt{3}+1)\tan\theta + \sqrt{3} = 0$

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54. Solve : $(0^\circ \leq \theta \leq 90^\circ)$:

$\sec^2\theta + \tan^2\theta = 7$

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55. Solve : $(0^\circ \leq \theta \leq 90^\circ)$:

$2\sin^2\theta = 3(1 - \cos\theta)$

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56. Solve : $(0^\circ \leq \theta \leq 90^\circ)$:

$2\sin\theta\tan\theta + 1 = \tan\theta + 2\sin\theta$

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57. If α, β, γ ,are positive acute angles and $\sin(\alpha + \beta - \gamma) = \cos(\beta + \gamma - \alpha) = \tan(\gamma + \alpha - \beta) = 1$ find

α, β and γ.

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58. If A,B,C are the angles of an acute angled triangle and $\cos(B+C-A)=0, \sin(C+A-B)=\frac{\sqrt{3}}{2}$, find the values of A,B , and C.

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59. If $1+\cos^2 A=3\cos A\sin A$, find the value of cotA.

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60. If $3\sin\theta+4\cos\theta=5\left(0<\theta<\frac{\pi}{2}\right)$, show that $\sin\theta=\frac{3}{5}$.

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61. If $\cos ec\alpha + \cot\alpha = a$, prove that , $\cos\alpha = \dfrac{a^2 - 1}{a^2 + 1}$.

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62. If $4x \sec A = 1 + 4x^2$, prove that, $\sec A + \tan A = 2x$ or , $\dfrac{1}{2x}$.

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63. If $\tan^2\theta = 1 - e^2$, prove that, $\sec\theta + \tan^3\theta \cos ec\theta = \left(2 - e^2\right)^{\frac{3}{2}}$.

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64. If $a^2 \sec^2\alpha - b^2 \tan^2\alpha = c^2$ show that, $\sin\alpha = \pm\sqrt{\dfrac{c^2 - a^2}{c^2 - b^2}}$.

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65. If $\sin^4\theta + \sin^2\theta = 1$ show that, $\tan^4\theta - \tan^2\theta = 1$.

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66. If $\tan^4\theta + \tan^2\theta = 1$, prove that, $\cos^4\theta + \cos^2\theta = 1$

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67. If $\sin^2\theta = \cos^3\theta$ prove that, $\cot^6\theta - \cot^2\theta = 1$.

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68. If $\sin\theta + \sin^2\theta = 1$, show that $\cos^4\theta + \cos^2\theta = 1.$

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69. If $\cos\theta - \sin\theta = \sqrt{2}\sin\theta$, show that, $\cos\theta + \sin\theta = \sqrt{2}\cos\theta\left[0 < \theta < \frac{\pi}{2}\right]$.

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70. If $u_n = \sin^n\alpha + \cos^n\alpha$ then show that, the value of $6u_4 - 4u_6$ is independent of α .

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71. Find the principal value of $\cos^{-1}\left(-\frac{1}{2}\right)$

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72. Eliminate θ in each of the following :

$x = a\sec\theta, y = b\tan\theta$

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73. Eliminate θ in each of the following :

$a \sin \theta = p, b \tan \theta = q$

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74. Eliminate θ in each of the following :

$\sin \theta + \cos \theta = m, \tan \theta + \cot \theta = n$

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75. Eliminate θ in each of the following :

$\sin \theta - \cos \theta = a, \sec \theta - \cos ec\theta = b$

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76. If $7 \sin^2 \theta + 3 \cos^2 \theta = 4$, prove that, $\tan \theta = \pm \frac{1}{\sqrt{3}}$.

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77. Find the minimum value of $\cos^4\theta + \sin^2\theta$.

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78. If p $\tan\theta = \tan p\theta$, show that, $\frac{\sin^2 p\theta}{\sin^2\theta} = \frac{p^2}{1+(p^2-1)\sin^2\theta}$

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79. If

$$(1+\sin\alpha)(1+\sin\beta)(1+\sin\gamma) = (1-\sin\alpha)(1-\sin\beta)(1-\sin\gamma),$$

show that each side is equal to $\pm\cot\alpha\cot\beta\cot\gamma$.

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80. If

$(\cos ec\alpha - 1)(\cos ec\beta - 1)(\cos ec\gamma - 1) = (\cos ec\alpha + 1)(\cos ec\beta + 1)(\cos e$

show that each side is equal to $\pm \cot \alpha \cot \beta \cot \gamma$.

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81. Eliminate θ each of the following :

$l_1 \cos \theta + m_1 \sin \theta + n_1 = 0, l_2 \cos \theta + m_2 \sin \theta + n_2 = 0$

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82. Eliminate θ each of the following :

$a \sec \theta + b \tan \theta + c = 0, a' \sec \theta + b' \tan \theta + c' = 0$

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83. Eliminate θ each of the following :

$\cos^3\theta + 3\cos\theta\sin^2\theta = x, \sin^3\theta + 3\sin\theta\cos^2\theta = y$

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84. If $\tan\theta + \sin\theta = m$ and $\tan\theta - \sin\theta = n$, prove that, $mn = \tan^2\sin^2\theta$ and $m^2 - n^2 = 4\sqrt{mn}(m > n)$.

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85. If $\operatorname{cosec}\theta - \sin\theta = m^3$ and $\sec\theta - \cos\theta = n^3$, then prove that $m^2n^2\left(m^2 + n^2\right) = 1$.

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86. If $\frac{\sin^4\theta}{x} + \frac{\cos^4\theta}{y} = \frac{1}{x+y}$, show that , $\frac{\sin^{2m+2}\theta}{x^m} + \frac{\cos^{2m+2}\theta}{y^m} = \frac{1}{(x+y)^m}$

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87. If $\cos ec\alpha + \cot\alpha = 2 + \sqrt{5}$, show that, $\cos\alpha = \frac{2}{\sqrt{5}}$.

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88. Prove that $\cos^2 A - \sin^2 A = \frac{1 - \tan^2 A}{1 + \tan^2 A}$.

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89. If $a\sin x = b\cos x = \frac{2c\tan x}{1 - \tan^2 x}$, prove that, $\left(a^2 - b^2\right)^2 = 4c^2\left(a^2 + b^2\right)$.

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90. If $\cos\theta = \frac{\cos\alpha\cos\beta}{1 + \sin\alpha\sin\beta}$, show that , $\sin\theta = \pm\frac{\sin\alpha + \sin\beta}{1 + \sin\alpha\sin\beta}$.

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91. If $\frac{\cos^4 x}{\cos^2 y} + \frac{\sin^4 x}{\sin^2 y} = 1$, show taht, $\frac{\cos^4 y}{\cos^2 x} + \frac{\sin^4 y}{\sin^2 x} = 1$

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92. If cosec x =cosec y cosec z+cot y cot z, prove that cosec y=cosec z cosec x $\pm$ cot z cot x

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93. If $\frac{x\cos\theta}{a} + \frac{y\sin\theta}{b} = 1$ and $\frac{ax}{\cos\theta} - \frac{by}{\sin\theta} = a^2 - b^2$, prove that $\frac{x^2}{a^2} + \frac{y^2}{b^2}$.

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94. Find the principal value of $\tan^{-1}\left(-\frac{1}{\sqrt{3}}\right)$

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Sample Questions For Competitive Exams

1. If x=$r\sin\theta\cos\phi, y = r\sin\theta\sin\phi$ and $z = r\cos\theta$ then the value of $\sqrt{x^2+y^2+z^2}$ will be

A. $\cos\theta$

B. $-r$

C. r

D. $\cos\phi$

Answer: C

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Sample Questions For Competitive Exams Multiple Answers Type

1. If $\sec\theta = x + \frac{1}{2x}$, then the value of $\sec\theta + \tan\theta$ will be

A. 2x

B. x

C. $\frac{2}{x}$

D. $\frac{1}{x}$

Answer: A::C

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2. The maximum and minimum value of cos (cos x) are

A. 1

B. cos 1

C. 0

D. none of these

Answer: A::B

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3. If $1 + \sin^2 A = 3 \sin A \cos A,$ then the value of tan A will be

A. 1

B. -1

C. $\frac{1}{2}$

D. $-\frac{1}{2}$

Answer: A::C

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4. If $\tan \theta = \frac{\sin A - \cos A}{\sin A + \cos A}$, then the value of sin A +cos A will be

A. $\sqrt{2}\cos\theta$

B. $\sqrt{2}\sin\theta$

C. $-\sqrt{2}\cos\theta$

D. $-\sqrt{2}\sin\theta$

Answer: A

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Sample Questions For Competitive Exams Integer Answer Type

1. If $\sin x = \cos^2 x$ then the value of $\cos^2 x\left(1+\cos^2 x\right)$ will be

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2. Find the minimum value of $\cos^2\theta + \sec^2\theta$

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3. If $\cos^2 \alpha = \sin^3 \alpha$ then the value of $\tan^6 \alpha - \tan^2 \alpha$ will be

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4. If $p_n = \cos^n \theta + \sin^n \theta$ then the value of $2P_6 - 3P_4 + 1$ will be

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5. If sin A +cos A =p and tan A +cot A=q , then the value of $q(p^2 - 1)$ will be

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Sample Questions For Competitive Exams Comprehension Type

1. ABC is an acute angled triangle in which $\cos ec(B + C - A) = 1$ and $\cot(C + A - B) = \frac{1}{\sqrt{3}}$, then

sin A =

A. 0

B. $\frac{1}{2}$

C. $\frac{1}{\sqrt{2}}$

D. $\frac{\sqrt{3}}{2}$

Answer: C

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2. ABC is an acute angled triangle in which $\cos ec(B+C-A)=1$ and $\cot(C+A-B)=\frac{1}{\sqrt{3}}$, then tan C=

A. 0

B. $2-\sqrt{3}$

C. $2+\sqrt{3}$

D. $\sqrt{3}$

Answer: C

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3. ABC is an acute angled triangle in which $\cos ec(B+C-A)=1$ and $\cot(C+A-B)=\frac{1}{\sqrt{3}}$, then sec B=

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4. If $\sin\alpha=\frac{12}{13}$, $\cos\beta=\frac{4}{5}$ and α,β are two acute angles, then Value of $\sin\alpha\cos\beta+\cos\alpha\sin\beta$ is

A. $\frac{61}{65}$

B. $\frac{63}{65}$

C. 1

D. $\frac{67}{65}$

Answer: B

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5. If $\sin\alpha = \frac{12}{13}, \cos\beta = \frac{4}{5}$ and α, β are two acute angles, then Value of $\frac{\tan\alpha - \tan\beta}{1 + \tan\alpha\tan\beta}$ is

A. $\frac{33}{56}$

B. $\frac{31}{56}$

C. $\frac{29}{56}$

D. none of these

Answer: A

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6. If $\sin\alpha = \frac{12}{13}, \cos\beta = \frac{4}{5}$ and α, β are two acute angles, then

Value of $\sec\alpha\cot\beta + \tan\alpha\cos ec\beta$ is

A. $\frac{32}{5}$

B. $\frac{33}{5}$

C. $\frac{34}{5}$

D. 7

Answer: C

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Sample Questions For Competitive Exams Assertion Reason Type

1. Statement -I : cos 1 $< \cos 7$

Statement -II: In 1st quadrant the value of cosin is decreasing but the value of sine is increasing .

A. Statement-I is true, statement-II is true and statement-II is a correct explanation for statement- I.

B. Statement-I is true, Statement-II is true but Statement-II is not a correct explanation of Statement-I.

C. Statement-I is true, Statement-II is false.

D. Statement-I is false, Statement-II is true.

Answer: B

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2. Find the principal value of $\sin^{-1}(-1)$

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