

Misc#



69. The value of $\frac{1}{\sin\theta} - \frac{\cot^2\theta}{1+\operatorname{cosec}\theta}$ is:

$\frac{1}{\sin\theta} - \frac{\cot^2\theta}{1+\operatorname{cosec}\theta}$ का मान है:

[A] 0

[C] 2

[B] 1

[D] -1

$$\cancel{\operatorname{cosec}\theta} - (\cancel{\operatorname{cosec}\theta} - 1) = 1$$

$$\cancel{\operatorname{cosec}\theta} = (\cancel{\operatorname{cosec}\theta} - 1)(\cancel{\operatorname{cosec}\theta} + 1)$$

70. If $x = a \sec^n \theta$, $y = b \tan^n \theta$ is, then it will be

यदि $x = a \sec^n \theta$, $y = b \tan^n \theta$ है तो..... होगा।

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[A] $\left(\frac{x}{a}\right)^{2/n} + \left(\frac{y}{b}\right)^{2/n} = 1$ [B] $\left(\frac{a}{x}\right)^{2/n} + \left(\frac{b}{y}\right)^{2/n} = 1$
[C] $\left(\frac{x}{a}\right)^{2/n} - \left(\frac{y}{b}\right)^{2/n} = 1$ [D] $\left(\frac{a}{x}\right)^{2/n} - \left(\frac{b}{y}\right)^{2/n} = 1$

$$\left(\frac{x}{a}\right)^{\frac{1}{n}} = \sec \theta$$

$$\left(\frac{y}{b}\right)^{\frac{1}{n}} = \tan \theta$$

$$\sec^2 \theta - \tan^2 \theta = 1$$
$$\left(\frac{x}{a}\right)^{\frac{2}{n}} - \left(\frac{y}{b}\right)^{\frac{2}{n}} = 1$$

71. If $x = a \sec \theta \cos \phi$, $y = b \sec \theta \sin \phi$ and $z = x \tan \theta$, then the value of $\left(\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2}\right)$ is equal to:

यदि $x = a \sec \theta \cos \phi$, $y = b \sec \theta \sin \phi$ और $z = x \tan \theta$ है, तो $\left(\frac{x^2}{a^2} + \frac{y^2}{b^2} - \frac{z^2}{c^2}\right)$ का मान ____ होगा:

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[A] 2

[B] 1

[C] 3

[D] 0

$$\text{put } \theta = \phi = 0^\circ$$

$$x = a$$

$$y = 0$$

$$z = 0$$

72. If α is an acute angle, and $\tan^2\alpha - \sec\alpha = 19$, then find the value of $\cos\alpha$.
 यदि α का एक न्यून कोण है, और $\tan^2\alpha - \sec\alpha = 19$ तो $\cos\alpha$ का मान ज्ञात कीजिए।

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[A] $\frac{2}{3}$
 [C] $\frac{1}{2}$

[B] $\frac{1}{5}$
 [D] $\frac{1}{4}$

$\frac{1}{5}$

$$(\sec^2\alpha) - \sec\alpha = 19$$

$$\sec\alpha = \cancel{-4}, +5$$

$$1. \sec^2\alpha - \sec\alpha - 20 = 0$$

$$\sec\alpha = -1$$

73. $\left[1 + \frac{\tan^2 A}{1 + \sec A}\right] \cdot \left[\frac{\cot^2 A}{\csc A - 1} - 1\right] = ?$

[A] $2\cos 2A$

[B] $2\sin 2A$

☒ [C] $2\csc 2A$

[D] $2\tan 2A$

$$\frac{2 \times 1}{2 \sec A} = \frac{2}{2 \sec A}$$

$$(1 + \sec A) \times (\csc A - 1)$$

$$= \sec A \cdot \csc A$$

$$= 2 \csc 2A$$

74. The value of $\left(\frac{\sin A}{1-\cos A} + \frac{1-\cos A}{\sin A}\right) \div \left(\frac{\cot^2 A}{1+\operatorname{cosec} A} + 1\right)$ is:

$\left(\frac{\cancel{1+\cos A}}{\sin A} + \frac{1-\cancel{\cos A}}{\sin A}\right) \div \left(\frac{\cot^2 A}{1+\operatorname{cosec} A} + 1\right)$ का मान है:

[A] $\frac{1}{2}$

[B] $\frac{3}{2}$

[C] **2**

[D] 1

$\frac{2}{\cancel{\sin A \times \operatorname{cosec} A}}$

$\cancel{\operatorname{cosec} A} \div \cancel{A+1}$

$\frac{2}{\cancel{\sin A}} \div \cancel{\operatorname{cosec} A}$

$\frac{S}{\cancel{HC}} \rightarrow \frac{HC}{S}$

75. Simplify: $1 + \frac{\tan^2 \theta}{\sec \theta + 1} + \frac{\operatorname{cosec} \theta + 1}{\cot \theta} - \frac{\cot \theta}{\operatorname{cosec} \theta - 1}$

$1 + \frac{\tan^2 \theta}{\sec \theta + 1} + \frac{\operatorname{cosec} \theta + 1}{\cot \theta} - \frac{\cot \theta}{\operatorname{cosec} \theta - 1}$ सरल करें:

[A] 1

[C] $\operatorname{cosec} \theta$

[B] $\sec \theta$

[D] $\sin \theta \cos \theta$

~~A $\sec \theta$~~

$$\frac{\sec \theta + 1}{\cot \theta} \Rightarrow \frac{\cot \theta}{\sec \theta - 1}$$

76. If $\frac{\cos\theta}{\operatorname{cosec}\theta+1} + \frac{\cos\theta}{\operatorname{cosec}\theta-1} = 2$, where $0 < \theta < 90^\circ$, then find $\sin^4\theta + \cos^4\theta$?

यदि $\frac{\cos\theta}{\operatorname{cosec}\theta+1} + \frac{\cos\theta}{\operatorname{cosec}\theta-1} = 2$, $0 < \theta < 90^\circ$ है, तो $\sin^4\theta + \cos^4\theta$ ज्ञात कीजिये?

[A] 2

[B] 1

[C] $\frac{1}{2}$

[D] $\frac{1}{4}$

$$\frac{1}{4} + \frac{1}{4}$$

$$\frac{\cancel{\cos\theta} \times \cancel{\operatorname{cosec}\theta}}{\cancel{\cos\theta}} = \cancel{2}$$

$$\cancel{\frac{\cos\theta}{\cos\theta}} = 1$$

$$\tan\theta = 1$$

$$\theta = 45^\circ$$

$$\left(\frac{1}{\sqrt{2}}\right)^4$$

77. $\left[\frac{1}{\sec A + \tan A} \right]^2 = ?$

[A] $\sec A + \tan A$

[C] $\frac{1 - \sin A}{1 + \sin A}$

[B] $\sin A \cos A$

[D] $\frac{1 - \cos A}{1 + \cos A}$

$$\begin{aligned} & \rightarrow (\sec A - \tan A)^2 \\ &= \left(\frac{1 - \sin A}{\cos A} \right)^2 = \frac{(1 - \sin A)^2}{(\cancel{1 - \sin A})(1 + \sin A)} \\ &= \frac{1 - \sin A}{1 + \sin A} \end{aligned}$$

78. If $27\sec^2\theta - 11\tan^2\theta = 52$, then $\frac{1+2\sin\theta.\cos\theta}{1-2\sin\theta.\cos\theta}$?

यदि $27\sec^2\theta - 11\tan^2\theta = 52$, तो $\frac{1+2\sin\theta.\cos\theta}{1-2\sin\theta.\cos\theta}$? $\frac{1+\sin 2\theta}{1-\sin 2\theta}$

[A] 90

[B] 81

[C] 76

[D] 63

$$\left(\frac{\sin\theta + \cos\theta}{\sin\theta - \cos\theta}\right)^2$$
$$\left(\frac{9}{1}\right)^2 = 81$$

$$27 + 27\tan^2\theta - 11\tan^2\theta = 52$$

$$16\tan^2\theta = 25$$

$$4\tan\theta = 5$$

$$\tan\theta = \frac{5}{4} \Rightarrow \frac{\sin\theta}{\cos\theta} = \frac{5}{4}$$

$$(\sin \theta + \cos \theta)^2 = 1 + \sin 2\theta$$



79. If $\left\{ \left(\frac{\sec\theta - 1}{\sec\theta + 1} \right)^n \right\} = \operatorname{cosec}\theta - \cot\theta$, then $n = ?$

यदि $\left\{ \left(\frac{\sec\theta - 1}{\sec\theta + 1} \right)^n \right\} = \operatorname{cosec}\theta - \cot\theta$ है, तो $n = ?$

[A] 1

[C] -1

☒ [B] 0.5

[D] -0.5

Let $\theta = 45^\circ$

$$\frac{\sqrt{2}-1}{\sqrt{2}+1} \times \frac{\sqrt{2}-1}{\sqrt{2}-1} = (\sqrt{2}-1)^2$$

$$\left(\frac{\sqrt{2}-1}{\sqrt{2}+1} \right)^n = \sqrt{2}-1$$
$$(\sqrt{2}-1)^n = (\sqrt{2}-1)^1$$

$$n = 1$$

80. Evaluate the following expression in terms of trigonometric ratios.

निम्नलिखित का मान त्रिकोणमितीय अनुपातों के पदों में ज्ञात करें।

$$\frac{\sec A - \tan A}{\sec A + \tan A} = (\sec A - \tan A)^2 = \sec^2 A + \tan^2 A - 2\sec A \tan A$$

[A] $1 + 2 \tan^2 A + 2\sec A \tan A$

[B] $1 + 2 \sec^2 A - 2\sec A \tan A$

[C] $1 + 2 \tan^2 A - 2\sec A \tan A$

[D] $1 + \sec^2 A + 2\sec A \tan A$

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

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

81. If $1 + 2\tan^2\theta + 2\sin\theta\sec^2\theta = \frac{a}{b}$, $0^\circ < \theta < 90^\circ$, then $\frac{a+b}{a-b} = ?$

यदि $1 + 2\tan^2\theta + 2\sin\theta\sec^2\theta = \frac{a}{b}$, $0^\circ < \theta < 90^\circ$, तो $\frac{a+b}{a-b} = ?$

[A] $\sin\theta$

[B] $\cos\theta$

[C] $\csc\theta$

[D] $\sec\theta$

$$\frac{2800}{2400} = \sec\theta$$

$$\sec^2\theta + \tan^2\theta + 2\sec\theta \cdot \tan\theta$$
$$= (\sec\theta + \tan\theta)^2$$

$$= \frac{(\sec\theta + \tan\theta)}{(\sec\theta - \tan\theta)} = \frac{a}{b}$$

82. $1 + 2\cot^2\theta + 2\cos\theta \operatorname{cosec}^2\theta$, $0^\circ < \theta < 90^\circ$, is equal to:

$1 + 2\cot^2\theta + 2\cos\theta \operatorname{cosec}^2\theta$, $0^\circ < \theta < 90^\circ$ का मान ज्ञात करें।

[A] $\frac{1-\sin\theta}{1+\sin\theta}$

[C] $\frac{1-\cos\theta}{1+\cos\theta}$

[B] $\frac{1+\cos\theta}{1-\cos\theta}$

[D] $\frac{1+\sin\theta}{1-\sin\theta}$

$$\sec^2\theta + \cot^2\theta + 2\cot\theta \cdot \sec\theta$$

$$(\sec\theta + \cot\theta)^2$$

$$= \frac{\sec\theta + \cot\theta}{\sec\theta - \cot\theta} = \frac{\frac{1}{\cancel{c}} + \frac{1}{\cancel{s}}}{\frac{1}{\cancel{c}} - \frac{1}{\cancel{s}}} = \frac{1+c}{1-c}$$

83. Find the value of $\frac{\tan\theta + \sec\theta - 1}{\tan\theta - \sec\theta + 1}$?

$\frac{\tan\theta + \sec\theta - 1}{\tan\theta - \sec\theta + 1}$ का मान ज्ञात कीजिये।

~~(A)~~ $\frac{1 + \sin\theta}{\cos\theta}$

(B) $\frac{1 + \tan\theta}{\cot\theta}$

(C) $\frac{1 + \cos\theta}{\sin\theta}$

(D) $\frac{1 + \cot\theta}{\tan\theta}$

[A] $\frac{1 + \sin\theta}{\cos\theta}$

[B] $\frac{1 + \tan\theta}{\cot\theta}$

[C] $\frac{1 + \cos\theta}{\sin\theta}$

[D] $\frac{1 + \cot\theta}{\tan\theta}$

Basic $\Rightarrow$

$$\sec\theta + \tan\theta = x \text{ (मान)} \\ \sec\theta - \tan\theta = \frac{1}{x}$$

$$\sec\theta + \tan\theta = x$$

$$\frac{x-1}{-\frac{1}{x}+1}$$

$$= \frac{x-1}{\frac{-1+x}{x}}$$

$$= x = \frac{1}{\csc\theta} + \frac{1}{\sec\theta}$$

84. If $\frac{(\tan\theta - \sec\theta + 1)}{(\tan\theta + \sec\theta - 1)} \sec\theta = \frac{1}{k}$, then $k = ?$

यदि $\frac{(\tan\theta - \sec\theta + 1)}{(\tan\theta + \sec\theta - 1)} \sec\theta = \frac{1}{k}$, तो $k = ?$

☒ [A] $1 + \sin\theta$

[B] $1 - \cos\theta$

[C] $1 + \cos\theta$

[D] $1 - \sin\theta$

$$(\sec\theta - \tan\theta) \cdot \sec\theta = \frac{1}{k}$$

$$\frac{1 - \sin\theta}{\cos\theta} \times \frac{1}{\cos\theta} = \frac{1}{k}$$

$$\frac{1}{1 + \sin\theta} = \frac{1}{k}$$

$$\frac{-\frac{1}{x} + 1}{x - 1} = \frac{-\frac{1+x}{x}}{\frac{x-1}{x}} = \frac{1}{x}$$

84. If $\frac{(\tan\theta - \sec\theta + 1)}{(\tan\theta + \sec\theta - 1)} \sec\theta = \frac{1}{k}$, then $k = ?$

यदि $\frac{(\tan\theta - \sec\theta + 1)}{(\tan\theta + \sec\theta - 1)} \sec\theta = \frac{1}{k}$, तो $k = ?$

$\theta = \text{any angle}$

~~[A] $1 + \sin\theta$~~

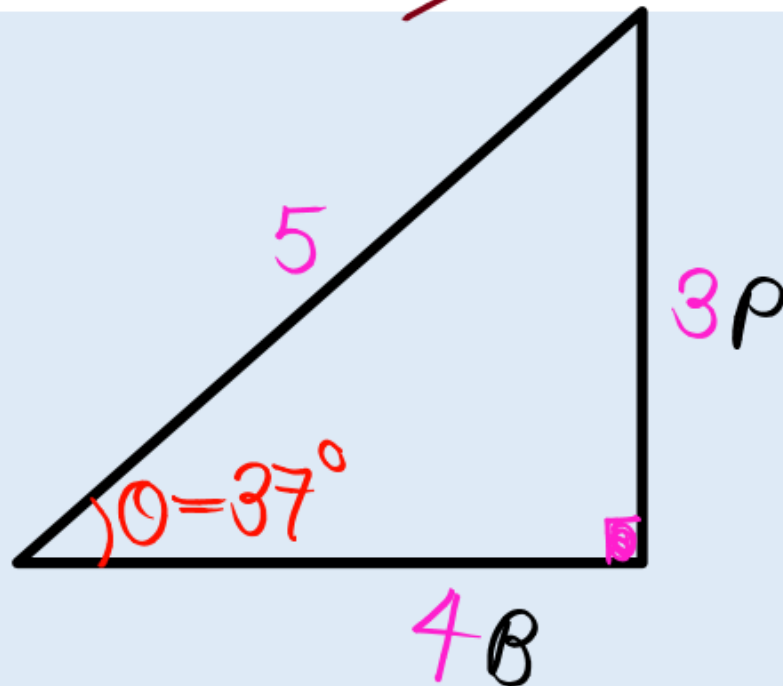
~~[C] $1 + \cos\theta$~~

$$\frac{\frac{3}{4} - \frac{5}{4} + 1}{\frac{3}{4} + \frac{5}{4} - 1} \times \frac{5}{4} = \frac{1}{k}$$

~~[B] $1 - \cos\theta$~~

~~[D] $1 - \sin\theta$~~

but



$$\frac{\frac{1}{2}}{1} \times \frac{5}{4} = \frac{1}{k}$$

$$k = \frac{8}{5}$$

85. The value of $\frac{(1+\sin A)(\tan A - \sec A + 1)\sec A}{\tan A + \sec A - (\sec^2 A - \tan^2 A)}$ is:

$\frac{(1+\sin A)(\tan A - \sec A + 1)\sec A}{\tan A + \sec A - (\sec^2 A - \tan^2 A)}$ का मान ज्ञात कीजिए।

[A] $\sin A$

[B] 0

[C] $\sec A$

[D] 1

H.W



86. The expression $(\tan\theta + \cot\theta)(\sec\theta + \tan\theta)(1 - \sin\theta)$, $0^\circ < \theta < 90^\circ$, is equal to:

व्यंजक $(\tan\theta + \cot\theta)(\sec\theta + \tan\theta)(1 - \sin\theta)$, का मान है:

[A] $\sec\theta$

☒ [B] $\operatorname{cosec}\theta$

[C] $\cot\theta$

[D] $\sin\theta$

$$\sec\theta - \frac{\sin\theta}{\cos\theta}$$

$$\frac{1}{\cancel{\sin\theta}} \times \cancel{\cos\theta} = \sec\theta$$

$$(\sec\theta + \tan\theta)(\sec\theta - \tan\theta) = 1$$

87. Let $0^\circ < \theta < 90^\circ$, $(1 + \cot^2 \theta)(1 + \tan^2 \theta) \times (\sin \theta - \operatorname{cosec} \theta)(\cos \theta - \sec \theta)$ is equal to:

मान लें कि $0^\circ < \theta < 90^\circ$ है तो $(1 + \cot^2 \theta)(1 + \tan^2 \theta) \times (\sin \theta - \operatorname{cosec} \theta)(\cos \theta - \sec \theta)$ का मान इनमें से किसके बराबर होगा?

☒ [A] $\sec \theta \operatorname{cosec} \theta$

[B] $\sec \theta + \operatorname{cosec} \theta$

[C] $\sin \theta + \cos \theta$

[D] $\sin \theta \cos \theta$

$$S - \frac{1}{S} = \frac{-C^2}{S}$$

$$C - \frac{1}{C} = \frac{-S^2}{C}$$

$$\cancel{\sec^2 \theta} \times \cancel{\sec^2 \theta} \times \cancel{-\frac{C^2}{S}} \times \cancel{-\frac{S^2}{C}} = \frac{1}{SC}$$

88. $\sec\theta \cdot \operatorname{cosec}\theta (1 - \sin\theta)(1 - \cos\theta)(\sec\theta + \tan\theta)(\operatorname{cosec}\theta + \cot\theta) = ?$

[A] 1

[C] 4

[B] -1

[D] 0

|X|

$\frac{6}{8} \times \frac{6}{6} = \frac{6}{8}$

89. Find the value of $7\sec A(1+\sin A)(\sec A - \tan A) - 4$.

~~$7\sec A(1+\sin A)(\sec A - \tan A) - 4$~~ का मान ज्ञात करें।

[A] 7

[B] 3

[C] 10

[D] 4

$7 - 4$

90. $\frac{\cot\theta}{(1-\sin\theta)(\sec\theta+\tan\theta)}$ is equal to:
 किसके बराबर है:

~~$\frac{\sec\theta \times \cot\theta}{(1-\sin\theta)(\sec\theta+\tan\theta)}$~~

☒ [A] cosecθ

[C] secθ

[B] sinθ

[D] 1

$\frac{1}{\cancel{c} \times \cancel{s}}$
 $= \sec\theta$

91. Simplify: $\frac{(1+\sin A)(\sec A - \tan A)}{\operatorname{cosec} A (1 - \cos A)(\operatorname{cosec} A + \cot A)}$

~~$\sec A (1 + \sin A)(\sec A - \tan A)$~~
 ~~$\sec A \operatorname{cosec} A (1 - \cos A)(\operatorname{cosec} A + \cot A)$~~ को सरल कीजिए

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[A] $\tan A$

[C] 2

[B] 1

[D] $\cos A$

92. $\frac{(1+\tan\theta+\sec\theta)(1+\cot\theta-\operatorname{cosec}\theta)}{(\sec\theta+\tan\theta)(1-\sin\theta)}$ is equal to:

$\frac{(1+\tan\theta+\sec\theta)(1+\cot\theta-\operatorname{cosec}\theta) \cdot \sec\theta}{(\sec\theta+\tan\theta)(1-\sin\theta) \cdot \sec\theta}$ के बराबर है।

[A] $2 \sec\theta$
 [B] $\sec\theta$
 [C] $2 \operatorname{cosec}\theta$
 [D] $\operatorname{cosec}\theta$

$$\frac{2 \sec\theta}{1}$$

93.

$\frac{\sin\theta[(1-\tan\theta)\tan\theta+\sec^2\theta]}{(1-\sin\theta)\tan\theta(1+\tan\theta)(\sec\theta+\tan\theta)}$ is equal to:

$\frac{\sin\theta[(1-\tan\theta)\tan\theta+\sec^2\theta]}{(1-\sin\theta)\tan\theta(1+\tan\theta)(\sec\theta+\tan\theta)}$ ---- के बराबर है।

[A] 1

[B] cosec θ sec θ

[C] sin θ cos θ

[D] -1

$$\frac{\cancel{\sin\theta} \cdot \cancel{(\tan\theta + 1)}}{\cancel{(1-\sin\theta)} \cdot \cancel{\frac{1}{\cos\theta}} \cdot \cancel{(1+\tan\theta)} \cdot \cancel{(\sec\theta + \tan\theta)}} = 1$$

94. If $\frac{(\cos^6 \theta + \sin^6 \theta - 1)(\tan^2 \theta + \cot^2 \theta + 2) + 2}{(\sec \theta + \tan \theta)(\sec \theta - \tan \theta)^2 \cos \theta} = \frac{1}{k-1}, 0^\circ < \theta < 90^\circ$, then find k?

यदि $\frac{(\cos^6 \theta + \sin^6 \theta - 1)(\tan^2 \theta + \cot^2 \theta + 2) + 2}{(\sec \theta + \tan \theta)(\sec \theta - \tan \theta)^2 \cos \theta} = \frac{1}{k-1}, 0^\circ < \theta < 90^\circ$ है, तो k ज्ञात करें?

(ICAR Assistant 2022)

[A] $\sin \theta$

[B] $\cos \theta$

[C] $\sec \theta$

[D] $\operatorname{cosec} \theta$

$$\frac{(1 - 3\sec^2 \theta - 1) \times \left(\frac{1}{\sec \theta}\right)^2 + 2}{(1 - 3\sec^2 \theta - 1) \times \left(\frac{1}{\sec \theta}\right)^2 + 2}$$

$$\frac{-3 + 2}{-3 + 2} = -1$$

$$\frac{-1}{(1-9)} = \frac{-1}{-8} = \frac{1}{8}$$

95. Who will be equal to $\frac{(\sin\theta - \cos\theta)(1 + \tan\theta + \cot\theta)(\operatorname{cosec}^2\theta)}{\sec^3\theta - \operatorname{cosec}^3\theta}$, $0^\circ < \theta < 90^\circ$?

$\frac{(\sin\theta - \cos\theta)(1 + \tan\theta + \cot\theta)(\operatorname{cosec}^2\theta)}{\sec^3\theta - \operatorname{cosec}^3\theta}$, $0^\circ < \theta < 90^\circ$ कौन बराबर होगा?

(ICAR Technician 2022)

[A] $\sin^2\theta$

[B] $\sin\theta\cos\theta$

[C] $\cos^2\theta$

[D] $\sec\theta\operatorname{cosec}\theta$

~~$\frac{1}{\csc^3}$~~ ~~$\frac{1}{\sec^3}$~~

~~$(S - C) \cdot \left(\frac{SC + 1}{SC}\right) \times \frac{1}{S^2}$~~

~~$\frac{\csc^3}{\sec^3}$~~

~~$= \csc^3 \times \sec^3$~~

$S^3 - C^3 = (S - C) \cdot (1 + SC)$

96. Find the value of $\frac{\cos\theta(1+\sin\theta)}{(1+\sin\theta-\cos^2\theta)} \times \frac{(\tan\theta+\cot\theta)^{-1}}{(\operatorname{cosec}\theta-\sin\theta)(\sec\theta-\cos\theta)}$?
 $\frac{\cos\theta(1+\sin\theta)}{(1+\sin\theta-\cos^2\theta)} \times \frac{(\tan\theta+\cot\theta)^{-1}}{(\operatorname{cosec}\theta-\sin\theta)(\sec\theta-\cos\theta)}$ का मान ज्ञात कीजिये?

(SSC CGL 2022)

[A] $\cot\theta$

[B] $\sin^2\theta$

[C] $\operatorname{cosec}^2\theta$

[D] $\tan\theta$

$$\left(\frac{1}{\operatorname{sc}}\right)^{-1} = \operatorname{sc}$$

$$\frac{C \cdot (1+S)}{S \cdot (1+S)} \times \frac{\cancel{\operatorname{sc}}}{\cancel{C^2} \times \cancel{S^2}} = \frac{C}{S} = \cot\theta$$

97. $\left(\frac{\tan^3\theta}{\sec^2\theta} + \frac{\cot^3\theta}{\operatorname{cosec}^2\theta} + 2\sin\theta\cos\theta\right) \div (1 + \operatorname{cosec}^2\theta + \tan^2\theta)$, $0^\circ < \theta < 90^\circ$ is equal to:

$\left(\frac{\tan^3\theta}{\sec^2\theta} + \frac{\cot^3\theta}{\operatorname{cosec}^2\theta} + 2\sin\theta\cos\theta\right) \div (1 + \operatorname{cosec}^2\theta + \tan^2\theta)$, $0^\circ < \theta < 90^\circ$ का मान इनमें से

किसके बराबर होगा?

$\frac{1}{2} =$ [A] $\sin\theta\cos\theta$ $\frac{1}{2} \times \frac{1}{2}$
[C] $\sec\theta$

[B] $\operatorname{cosec}\theta$
[D] $\operatorname{cosec}\theta\sec\theta = 2$

put $\theta = 45^\circ$

$$\left(\frac{1}{2} + \frac{1}{2} + 1\right) \div (1 + 2 + 1)$$

$$2 \div 4 = \frac{1}{2}$$

97. $\left(\frac{\tan^3\theta}{\sec^2\theta} + \frac{\cot^3\theta}{\operatorname{cosec}^2\theta} + 2\sin\theta\cos\theta\right) \div (1 + \operatorname{cosec}^2\theta + \tan^2\theta), 0^\circ < \theta < 90^\circ$ is equal to:

$\left(\frac{\tan^3\theta}{\sec^2\theta} + \frac{\cot^3\theta}{\operatorname{cosec}^2\theta} + 2\sin\theta\cos\theta\right) \div (1 + \operatorname{cosec}^2\theta + \tan^2\theta), 0^\circ < \theta < 90^\circ$ का मान इनमें से

किसके बराबर होगा?

✓ [A] $\sin\theta\cos\theta$

[B] $\operatorname{cosec}\theta$

[C] $\sec\theta$

[D] $\operatorname{cosec}\theta\sec\theta$

$$\left(\frac{\cancel{S^3}}{\cancel{C}} + \frac{\cancel{C^3}}{\cancel{S}} + 2SC\right) \div \left(\cancel{\sec^2\theta} \times \cancel{\operatorname{cosec}^2\theta}\right)$$

$$\left(\frac{1 - \cancel{2SC^2}}{C \cdot S} + \cancel{2SC}\right)$$

$$\sin\theta \cdot \cos\theta \div (\sin\theta \cdot \cos\theta)^2 = \cos\theta \cdot \sin\theta$$

98. If $p = (2 + \cot^2 \theta + \tan^2 \theta) \div \left(\frac{1}{1+\cos\theta} + \frac{1}{1-\cos\theta} \right)$ and $q = (\sec\theta + \tan\theta)(1 - \sin\theta)$, $0^\circ < \theta < 90^\circ$, then $pq = ?$

यदि $p = (2 + \cot^2 \theta + \tan^2 \theta) \div \left(\frac{1}{1+\cos\theta} + \frac{1}{1-\cos\theta} \right)$ और $q = (\sec\theta + \tan\theta)(1 - \sin\theta)$ हो, तो pq कितना होगा?

(ICAR Technician 2023)

[A] $\sec^2 \theta$

[B] $\sec \theta / 2$

[C] $\sec \theta$

[D] $\frac{\cos^3 \theta}{2}$

$q = 0$

$$p = \left(\frac{1}{\sec} \right)^2 \div \frac{1}{\sec^2}$$

$$p = \frac{1}{\sec^2} \times \sec^2$$

$$p = 1$$

$$\frac{1}{\sec^2} \times \sec^2$$