1. If tan(x+y) = 1 and cos(x–y) = $\sqrt{3}/2$, then what is the value of x and y?

यदि tan(x+y) = 1 and cos(x–y) = $\sqrt{3}/2$, तो x और y का मान क्या है?

(a) x = 3, y = 4.5

(b) x = 37.5, y = 7.5

(c) X = 7.5, y = 37.5

(d) x = 4.5, y =3

SSC CHSL TIER – I 2022

2. If secA = $\frac{5}{4}$, then the value of $\frac{tanA}{1+tan^2A} - \frac{sinA}{secA}$ is:

यदि secA = $\frac{5}{4}$, तो $\frac{tanA}{1+tan^2A} - \frac{sinA}{secA}$ का मान ज्ञात कीजिए।

(a) 2

(b) 1

(c) 0

(d) 3

(SSC CGL 2022)

3. If $sin\,\theta + cosec\theta = 2$, Then $sin^{100}\,\theta + cosec^{100}\theta$ =?

(a) 0 (b) 1 (c) 2 (d) 4

4. If $0^0 \le \theta \le 90^0$, and $sec^{107}\theta + cos^{107}\theta = 2$, then, $(sec\theta + cos\theta)$ is equal to:

यदि $0^0 \le \theta \le 90^0$ और $sec^{107}\theta + cos^{107}\theta = 2$ है, तो $(sec\theta + cos\theta)$ का मान ज्ञात कीजिए।

(a) 2^{-107} (b) 2 (c) ½ (d) 1

5. If $tan\theta + cot\theta = 2$, θ is an acute angle, then find the value of $2\,tan^{25}\,\theta + 3\,cot^{20}\,\theta + 5\,tan^{30}\,\theta\,cot^{15}\,\theta$.

यदि $tan\theta + cot\theta = 2$ है, θ एक न्यून कोण है, तो $2\,tan^{25}\,\theta + 3\,cot^{20}\,\theta + 5\,tan^{30}\,\theta\,cot^{15}\,\theta$ का मान ज्ञात कीजिए।

(a) 12 (b) 10 (c) 8 (d) 6

(SSC CPO 2023)

6. If $tan\ \theta + cot\ \theta = -2$, then the value of $tan^9\theta + cot^9\theta$ is:

यदि $tan\ \theta + cot\ \theta = -2$ है, तो $tan^9\theta + cot^9\theta$ का मान ज्ञात कीजिए।

(a) 2

(b) –1

(c) –2

(d) 0

7. Simplify the given equation. $(1 + tan^2A)\,(1 + cot^2A)$ = ?

दिए गए समीकरण को सरल कीजिए । $(1 + tan^2A)(1 + cot^2A)$ =?

(a) $\frac{1}{\cos^2 A(1+\sin^2 A)}$ (b) $\frac{1}{\sin^2 A + \cos ec^2 A}$

(c) $\frac{1}{\sin^2 A(1-\sin^2 A)}$ (d) $\frac{1}{\sin^2 A(1+\cos^2 A)}$

SSC CHSL 2023 PRE

8. The value of $(cosec^2\ B - 1)\,(sec^2\ B - 1)$ is:

$(cosec^2B - 1)(sec^2B - 1)$ का मान क्या है?

(a) 3 (b) 4 (c) 1 (d) 2

SSC CHSL 2023 PRE

9. Find the value of the following expression.

$$\frac{(1+sec\emptyset)}{sec\emptyset}(1-cos\emptyset)$$

निम्नलिखित व्यंजक का मान ज्ञात कीजिए।

$$\frac{(1+sec\emptyset)}{sec\emptyset}(1-cos\emptyset)$$

(a) $\sin^2\emptyset$ (b) $\cos^2\emptyset$ (c) $\cot^2\emptyset$ (d) $\sec^2\emptyset$

SSC CHSL 2023 PRE

10. The given expression is equal to:

दिए गए व्यंजक का मान क्या है? $\frac{2\sec A}{\sec^2 A - 1}$

(a) 2 cosec A cot A (b) 2 cos A cot A

(c) 2 cosec A tan A (d) 2 cos A sin A

SSC CHSL 2023 PR

11. The given expression is equal to:

दिए गए व्यंजक का मान निम्न में से किसके बराबर है?

$\frac{(1+tan^2 A)}{cosec^2 A.tan A}$

(a) $\sec^2A$ (b) tanA (c) $\tan^2A$ (d) secA

SSC CHSL 2023 PRE

12. Simplify the given equation. $\frac{\cot^2 A - 1}{\cot A - 1}$ **= ?**

दिए गए समीकरण को सरल कीजिए। $\frac{cot^3 A-1}{cotA-1} = ?$

(a) $cosec^2A + cotA$ (b) $cosec^2A - cotA$ (c) $\cot^2A - cosecA$ (d) $\cot^2A + cosecA$

SSC CHSL 2023 PRE

13. The given expression $1 - \frac{tan^2\theta}{sec^2\theta}$ is equal to ?

दिया गया व्यंजक $1 - \frac{tan^2\theta}{sec^2\theta}$ किसके बराबर है?

A) $sin^2\theta cos^2\theta$
B) $sin^2\theta cot^2\theta$
C) $cot^2\theta cos^2\theta$
D) $tan^2\theta cos^2\theta$

14. Which of the following will satisfy $a^2 = b^2 + (ab)^2$ for the values a and b?

निम्नलिखित में से कौन **a** और **b** के लिए $a^2 = b^2 + (ab)^2$ संतुष्ट करेगा

A) a = sinx, b = cotx
B) a =cosx, b = tanx
C) a = cotx, b = cosx
D) a = sinx, b = tanx

15. $cot^2x - tan^2x$=?

a)4sec2xcosec2x b)4cot2xcosec2x c)sin8x d)4tan2xsec2x

16. If 2tan x + 3cot x = 7, then the value of $4\tan^2x + 9\cot^2x$ is:

यदि 2tan x + 3cot x = 7, है, तो $4\tan^2x + 9\cot^2x$ का मान ज्ञात कीजिए।

(a) 37

(b) 31

(c) 32

(d) 40

17. If $1 + \sin^2\theta = a\cos^2\theta$, then find $\sec^4\theta - \tan^4\theta$.

यदि $1 + \sin^2\theta = a\cos^2\theta$, तो $\sec^4\theta - \tan^4\theta$ ज्ञात कीजिए।

1. a^{-2} 2. a^{-1} 3. a 4. a^2

(SSC SELECTION POST XI 2023)

18. If $\sec^2A + \tan^2A = \frac{4}{17}$, $\sec^4A - \tan^4A$ is equal to:

यदि $\sec^2A + \tan^2A = \frac{4}{17}$ है, तो $\sec^4A - \tan^4A$ का मान क्या होगा?

(a) 13/17

(b) 4/13

(c) 4/17

(d) 5/17

(SSC CGL 2022)

19. If $\text{cosec}^2\theta + \cot^2\theta = \frac{1}{3}$, where $0 \le \theta \le \frac{\pi}{2}$, then the value of $\cot^4\theta - \text{cosec}^4\theta$ is:

यदि $\text{cosec}^2\theta + \cot^2\theta = \frac{1}{3}$ है, जहाँ $0 \le \theta \le \frac{\pi}{2}$ है, तो $\cot^4\theta - \text{cosec}^4\theta$ का मान..... है।

(a) 2/3

(b) –1/3

(c) 1/3

(d) –2/3

20. If $\tan\theta + \cot\theta = 4$, then the ratio of $3(\tan^2\theta + \cot^2\theta)$ to $(2\text{cosec}^2\theta\ \sec^2\theta - 4)$ will be:

यदि $\tan\theta + \cot\theta = 4$ है, तो $3(\tan^2\theta + \cot^2\theta)$ का $(2\text{cosec}^2\theta\ \sec^2\theta - 4)$ से अनुपात ज्ञात करें।

(a) 4 : 3

(b) 3 : 4

(c) 5 : 4

(d) 3 : 2

21. If $\sin t + \cos t = \frac{4}{5}$, then find $\sin t.\cos t$.

यदि $\sin t + \cos t = \frac{4}{5}$ है, तो $\sin t.\cos t$ का मान ज्ञात कीजिए।

(a) $\frac{9}{50}$ (b) $\frac{-9}{50}$ (c) $\frac{9}{50}$ (d) $\frac{-9}{50}$

SSC CGL 2023 PRE

22. If $\sin\theta + \cos\theta = 1.25$, then find the value of $\tan\theta + \cot\theta$?

यदि $\sin\theta + \cos\theta = 1.25$ है, तो $\tan\theta + \cot\theta$ का मान ज्ञात कीजिये?

A) $3\frac{5}{9}$

B) 2.666

C) 0.8

D) $\frac{25}{16}$

23. If $\sin\theta + \cos\theta = \frac{\sqrt{3}-1}{2\sqrt{2}}$, then what is the value of $\tan\theta + \cot\theta$?

यदि $sin\theta + cos\theta = \frac{\sqrt{3}-1}{2\sqrt{2}}$, तो **tanθ+cotθ** का मान क्या है?

A) $8(\sqrt{3}-2)$
B) $12(\sqrt{3}-2)$
C) $12(\sqrt{3}+2)$
D) $8(\sqrt{3}+2)$

24. Consider the following:

i) $\sqrt{sec^2\theta + cosec^2\theta} = tan\theta + cot\theta, where\ 0° < \theta < 90°$

ii) $\sqrt{tan^2\theta + cot^2\theta} = sec\theta + cosec\theta, where\ 0° < \theta < 90°$

Which of the above are identities?

निम्नलिखित को धयान मे रखते हुए:

i) $\sqrt{sec^2\theta + cosec^2\theta} = tan\theta + cot\theta, where\ 0° < \theta < 90°$

ii) $\sqrt{tan^2\theta + cot^2\theta} = sec\theta + cosec\theta, where\ 0° < \theta < 90°$

A) 1 only
B) 2 only
C) Bothe 1 and 2
D) Neither 1 nor 2

25. If A, B, C, D are the angles of a cyclic quadrilateral, then what is the value of $sin\frac{A+C}{2} + sin\frac{B+D}{2}$?

यदि **A, B, C, D** एक चक्रीय चतुर्भुज के कोण हैं, तो $sin\frac{A+C}{2} + sin\frac{B+D}{2}$ का मान क्या है?

A) 2
B) 0
C) 1
D) -1

26. If A, B, C are acute angles and sin (B+C-A) = cos(C+A-B)=tan(A+B-C)=1, then what is (A+B+C) equal to?

यदि **A, B, C** न्यून कोण हैं और **sin (B+C-A) = cos(C+A-B)=tan(A+B-C)=1** है, तो **(A+B+C)** किसके बराबर है?

A) 90°
B) 135°
c) 120°
d) 150°

27. $If\ (sec\,\alpha + tan\,\alpha)(sec\,\beta - tan\,\beta)(sec\,\gamma + tan\,\gamma)(sec\,\delta - tan\,\delta) = (sec\,\alpha - tan\,\alpha)\ (sec\,\beta + tan\,\beta)(sec\,\gamma - tan\,\gamma)(sec\,\delta + tan\,\delta)$, then value of each side = ?

a) ± 1
b) $sec\,\alpha\, sec\,\beta \cdot sec\,\gamma\, sec\,\delta$
c) $tan\,\alpha \cdot tan\,\beta \cdot tan\,\gamma \cdot tan\,\delta$
d) 0

28. Find the value of $4(sec^6\theta - tan^6\theta) - 6(sec^4\theta + tan^4\theta) + 5$ =?

(a) 2 (b) 3 (c) 4 (d) 1

29. If $tan9^0 = \frac{p}{q}$, then the value of $\frac{sec^2 81^0}{1+cot^2 81^0}$ is

a) $\frac{p}{q}$ b) $\frac{p^2}{p^2+q^2}$ c) $\frac{p^2}{q^2}$ d) $\frac{q^2}{p^2}$

30. $sec^4x - sec^2x$ = ?

a) $tan^2x - tan^4x$ b) $tan^2x + tan^4x$
c) $cos^4x - cos^2x$ d) $cos^2x - cos^4x$

31. $\frac{1}{cosecA - cotA} - \frac{1}{sinA}$ = ?

(a) $\frac{1}{sinA} + \frac{1}{cosecA+cotA}$
(b) $\frac{1}{sinA} - \frac{1}{cosecA+cotA}$
(c) $\frac{1}{sinA} - \frac{1}{cosecA-cotA}$

(d) $\frac{1}{sinA}+\frac{1}{cosecA-cotA}$

32. If $\cot^2\theta = 2-e^2$, then $\text{cosec}\theta + \cot^3\theta.\sec\theta$ is equal to ?

a) $(2-e^2)^{\frac{3}{2}}$ b) $(3-e^2)^{\frac{1}{2}}$

c) $(3+e^2)^{\frac{1}{2}}$ d) $(3-e^2)^{\frac{3}{2}}$

33. If $\tan^2 a = 3 + Q^2$, then $\sec a + \tan^3 a \text{ cosec } a$ = ?

$\tan^2 a = 3 + Q^2$ है, तो $\sec a + \tan^3 a \text{ cosec } a$ = ?

(a) $(3+Q^2)^{3/2}$

(b) $(7+Q^2)^{3/2}$

(c) $(5-Q^2)^{3/2}$

(d) $(4+Q^2)^{3/2}$ (SSC CGL 2022)

34. $\left[\frac{1}{secA+tanA}\right]^2$ =?

a)secA +tanA b)sinA cosA

c)$\frac{1-sinA}{1+sinA}$ d) $\frac{1-cosA}{1+cosA}$

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

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

(a) 1

(b) 0.5

(c) –1

(d) –0.5

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

निम्नलिखित का मान त्रिकोणमितीय अनुपातों के पदों में ज्ञात करें।

$\frac{secA-tanA}{secA+tanA}$

(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) $1 + 1\sec^2 A + 2\sec A \tan A$

37. $1 + 2\cot^2\theta + 2\cos\theta \text{ cosec}^2\theta$, $0° < \theta < 90°$, is equal to :

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

(a) $\frac{1-\sin\theta}{1+\sin\theta}$

(b) $\frac{1+\cos\theta}{1-\cos\theta}$

(c) $\frac{1-\cos\theta}{1+\cos\theta}$

(d) $\frac{1+\sin\theta}{1-\sin\theta}$

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

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

(a)$sin\theta$ (b) $cos\theta$ (c) $cosec\theta$ (d) $sec\theta$

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

(a)90 (b)81
(c)76 (d)63

40. The value of $\sec^4\theta(1-\sin^4\theta)-2\tan^2\theta$ is:

$\sec^4\theta(1-\sin^4\theta)-2\tan^2\theta$ का मान ज्ञात करें।

(a) 1
(b) 0
(c) –1
(d) $\frac{1}{2}$

41. $x=2y\,cot\,\theta+z, z=x\,cos\,\theta-3y$ then which one is true?

a. $1+\frac{4y^2}{(z-x)^2}=\left(\frac{z+3y}{x}\right)^2$
b. $1+\frac{4y^2}{(x-z)^2}=\frac{x^2}{(z+3y)^2}$
c. $1-\frac{x}{(z+3y)^2}=\frac{-4y^2}{(x-z)^2}$
d. $1+\left(\frac{2y}{x-z}\right)^2=\frac{x}{(z+3y)^2}$

42. $\left[1+\frac{tan^2A}{1+secA}\right]\left[\frac{cot^2A}{cosecA-1}-1\right]$ =?

a)2cos2A b)2sin2A
c)2cosec2A d)2tan2A

43. The value of $\left(\frac{sinA}{1-cosA}+\frac{1-cosA}{sinA}\right)\div\left(\frac{cot^2A}{1+cosecA}+1\right)$ is:

$\left(\frac{sinA}{1-cosA}+\frac{1-cosA}{sinA}\right)\div\left(\frac{cot^2A}{1+cosecA}+1\right)$ का मान है :

a) $\frac{1}{2}$ b) $\frac{3}{2}$ c) 2 d) 1

44. $\frac{cotx}{1+cosecx}+\frac{1+cosecx}{cotx}$ is equal to:

$\frac{cotx}{1+cosecx}+\frac{1+cosecx}{cotx}$ का मान _____ के बराबर होगा।

(a) 2 sec x (b) 2 cos x
(c) 2 cosec x (d) 2 sin x

45. What is the value of $\frac{1+tanA}{cosecA}+\frac{1+cotA}{secA}$?

$\frac{1+tanA}{cosecA}+\frac{1+cotA}{secA}$ का मान क्या है?

(a) 2 sec^2 A
(b) sec A + cosec A
(c) sec A + cosec A
(d) 2 $cosec^2$

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

(a) 1 (b) sec∅
(c) cosecθ (d) sinθcos∅

47. The expression $3cosec^2\theta\, cot^2\theta + cot^6\theta - cosec^6\theta$ *is equal to* : –

a) -2 b) 1 c) 2 d) -1

48. The value of $\frac{sec^6\theta-tan^6\theta-3sec^2\theta tan^2\theta+1}{cos^4\theta-sin^4\theta+2sin^2\theta+2}$ is?

$\frac{sec^6\theta-tan^6\theta-3sec^2\theta tan^2\theta+1}{cos^4\theta-sin^4\theta+2sin^2\theta+2}$ का मान ज्ञात कीजिये ?

a) $\frac{3}{4}$ b) $\frac{2}{3}$ c) $\frac{1}{2}$ d) 1

49. The expression (tanθ + cotθ) (secθ + tanθ)(1 – sinθ), 0° <A < 90°, is equal to:

व्यंजक (tanθ + cotθ) (secθ + tanθ)(1 – sinθ), 0° <A < 90°, का मान है:

(a) secθ (b) cosecθ (c) cotθ (d) sinθ

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

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

(a) $sec\theta\, cosec\theta$ (b) $sec\theta + cosec\theta$ (c) $sin\theta + cos\theta$ (d) $sin\theta\, cos\theta$

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

$\frac{(sec\,\theta+tan\theta)(1-sin\theta)}{cosec\theta(1+cos\theta)(cosec\theta-cot\theta)}$ बराबर है:

a) $sin\theta$
b) $sec\theta$
c) $cos\theta$
d) $cosec\theta$

52. $\frac{\sin\theta[(1-\tan\theta)\tan\theta+\sec^2\theta]}{(1-\sin\theta)\tan\theta(1+\tan\theta)(\sec\theta+\tan\theta)}$ 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) cosecθ secθ
(c) sinθ cosθ (d) – 1

53. The value of $\frac{\sec^2\theta(2+\tan^2\theta+\cot^2\theta)\div(\sin^2\theta-\tan^2\theta)}{(cosec^2\theta+\sec^2\theta)(1+\cot^2\theta)^2}$ is:

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

(a) – 1 (b) 1
(c) – 2 (d) 2

54. The expression $\frac{tan^6\theta-sec^6\theta+3sec^2\theta tan^2\theta}{tan^2\theta+cot^2\theta+2}$, 0°<θ<90° , is equal to:

व्यंजक $\frac{tan^6\theta-sec^6\theta+3sec^2\theta tan^2\theta}{tan^2\theta+cot^2\theta+2}$ का मान बताइए जहां 0°<θ<90° है।

(a) $sec^2\theta cosec^2\theta$ (b) $-sec^2\theta cosec^2\theta$
(c) $cos^2\theta sin^2\theta$ (d) $-cos^2\theta sin^2\theta$

55. The expression $\frac{cos^4\theta-sin^4\theta+2sin^2\theta+3}{(cosec\theta+cot\theta+1)(cosec\theta-cot\theta+1)-2}$, 0°<θ<90° , is equal to

व्यंजक $\frac{cos^4\theta-sin^4\theta+2sin^2\theta+3}{(cosec\theta+cot\theta+1)(cosec\theta-cot\theta+1)-2}$, का मान बताइए, जहां 0°<θ<90° है।

(a) $\frac{1}{2}sin\theta$ (b)2sinθ (c)secθ (d)2cosecθ

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

यदि $\frac{(cos^6\theta+sin^6\theta-1)(tan^2\theta+cot^2\theta+2)+2}{(sec\theta+tan\theta)(sec\theta-tan\theta)^2cos\theta} = \frac{1}{k-1}, 0° < \theta < 90°$ है, तो k ज्ञात करें? (ICAR Assistant 2022)

A) $Sin\theta$
B) $Cos\theta$
C) $Sec\theta$
D) $Cosec\theta$

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

$\frac{(\sin\theta-\cos\theta)(1+\tan\theta+\cot\theta)(\operatorname{cosec}^2\theta)}{\sec^3\theta-\operatorname{cosec}^3\theta}$, $0°<\theta<90°$ किसके बराबर होगा? (ICAR Technician 2022)

A) $\sin^2\theta$
B) $\sin\theta\cos\theta$
C) $\cos^2\theta$
D) $\sec\theta\operatorname{cosec}\theta$

58. Find the value of $\frac{\cos\theta(1+\sin\theta)}{(1+\sin\theta-\cos^2\theta)}\times\frac{(\tan\theta+\cot\theta)^{-1}}{(\operatorname{cosec}\theta-\sin\theta)(\sec\theta-\cos\theta)}$? ? (SSC CGL 2022)

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

A) $\cot\theta$
B) $\sin^2\theta$
C) $\operatorname{cosec}^2\theta$
D) $\tan\theta$

59. The expression $\frac{(1-\sin\theta+\cos\theta)^2(1-\cos\theta)\sec^3\theta\operatorname{cosec}^2\theta}{(\sec\theta-\tan\theta)(\tan\theta+\cot\theta)}$, $0°<\theta<90°$, is equal to

व्यंजक $\frac{(1-\sin\theta+\cos\theta)^2(1-\cos\theta)\sec^3\theta\operatorname{cosec}^2\theta}{(\sec\theta-\tan\theta)(\tan\theta+\cot\theta)}$, का मान बताइए, जहां $0°<\theta<90°$ है।

(a)sin θ (b)2cos θ (c)cot θ (d)2 tan θ

60. $\frac{(1+\sec\theta\operatorname{cosec}\theta)^2(\sec\theta-\tan\theta)^2(1+\sin\theta)}{(\sin\theta+\sec\theta)^2+(\cos\theta+\operatorname{cosec}\theta)^2}$, $0^0<\theta<90^0$, is equal to:

$\frac{(1+\sec\theta\operatorname{cosec}\theta)^2(\sec\theta-\tan\theta)^2(1+\sin\theta)}{(\sin\theta+\sec\theta)^2+(\cos\theta+\operatorname{cosec}\theta)^2}=?$, $0^0<\theta<90^0$

(a) $1-\cos\theta$ (b) $1-\sin\theta$ (c) $\cos\theta$ (d) $\sin\theta$

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

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

a) $\sin\theta\cos\theta$ (b) $\operatorname{cosec}\theta$ (c) $\sec\theta$ (d)$\operatorname{cosec}\theta\sec\theta$

62. If $p=(2+\cot^2\theta+\tan^2\theta)\div\left(\frac{1}{1+\cos\theta}+\frac{1}{1-\cos\theta}\right)$ and $q=(\sec\theta+\tan\theta)(1-\sin\theta)$, $0°<\theta<90°$, 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 $q=(\sec\theta+\tan\theta)(1-\sin\theta)$, $0°<\theta<90°$ हो, तो pq कितना होगा?

1. $\sec^2\theta$ 2. $\sec\theta/2$ 3. $\sec\theta$ 4. $\frac{\cos^3\theta}{2}$

(ICAR Technician 2023)

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

(a) 1 + sinθ (b) 1– cosθ (c) 1+ cosθ (d) 1– sinθ

64. What is $\frac{\cot A+\operatorname{cosec}A-1}{\cot A-\operatorname{cosec}A+1}$ equal to?

(a) $\frac{1+\sin A}{\cos A}$ (b) $\sin A$ (c) $\tan\frac{A}{2}$ (d) $\cot\frac{A}{2}$

65. If $\frac{\tan\theta}{1-\cot\theta}+\frac{\cot\theta}{1-\tan\theta}=1+k$, then k=?

(a) cotθ + secθ (b) tanθ + cosecθ (c) tanθ + secθ (d) cosecθ secθ

66. $\left[\frac{(\sec^3x-\tan^3x)}{(\sec x-\tan x)}\right]-2\tan^2x-\sec x\tan x=?$

a)0 b)2 c)1 d)-1

67. If $\tan\theta+\cot\theta=x$, then $\tan^4\theta+\cot^4\theta=?$

(a) $(x^3-3)^2+2$ (b) $(x^4-2x)+4$
(c) $x(x-4)+2$ (d) $x^2(x^2-4)+2$

68. $Sec^4x - cosec^4x - 2sec^2x + 2cosec^2x = \frac{63}{8}$, then $\tan^2x + \cot^2x$=?

a)2√2 b)$\frac{9}{2\sqrt{2}}$ c)$\frac{9}{8}$ d)$\frac{4}{\sqrt{3}}$

69. The value of expression $(1 + sec32° + cot58°)(1 - cosec32° + tan58°)$ is?

व्यंजक का मान (1+sec32°+cot58°)(1−cosec32°+tan58°) है?

A) 1 C) 4

B) 2 D) 5

70. Simplify the following expression $\frac{(sec\theta - cos\theta)(cot\theta + tan\theta)}{(1+tan\theta+sec\theta)(sec\theta)(1+cot\theta-cosec\theta)}, 0° < \theta < 90°$?

निम्नलिखित व्यंजक $\frac{(sec\theta - cos\theta)(cot\theta + tan\theta)}{(1+tan\theta+sec\theta)(sec\theta)(1+cot\theta-cosec\theta)}, 0° < \theta < 90°$ को सरल कीजिए?

(ICAR Assistant 2022)

A) $\frac{tan\theta}{2}$

B) $\frac{cot\theta}{2}$

C) $cosec\theta sec\theta$

D) $sin\theta cos\theta$

71. If $\tan^4x - \tan^2x = 1$, then the value of $\sin^4x + \sin^2x$ is:

यदि $\tan^4x - \tan^2x = 1$ है, तो $\sin^4x + \sin^2x$ का मान ज्ञात कीजिए:

(a) $\frac{3}{4}$ (b) $\frac{1}{2}$

(c) 1 (d) $\frac{3}{2}$

72. If $\cot^2\theta + \cot^4\theta = 7$, then the value of $7\sin^4\theta + \sin^2\theta$ is:

यदि $\cot^2\theta + \cot^4\theta = 7$ है, तो $7\sin^4\theta + \sin^2\theta$ का मान ज्ञात करें।

(a) 3

(b) 5

(c) 1

(d) 2

73. If $Sec^5x - sec^3x = 1$ then

$Cos^2x + cos^5x$=?

a)1 b)0 c)3/2 d)1/2

74. If $sec^2x - secx = 1$, then $tan^6x + 3\ tan^{10}x - 3tan^8x - tan^{12}x + 4$ =?

a) 4 b) 3 c) 5 d) 6

75. If $\text{cosec}\ \theta + \text{cosec}^2\ \theta = 1$ then $\cot^{12}\theta - 3\cot^{10}\theta + 3\cot^8\theta - \cot^6\theta$ = ?

a)-2 b)-1 c)0 d)1

76. If $\cot^4 A + \cot^2 A = 1$, then find the value of $\cos^4 A - 3\cos^2 A$.

यदि $\cot^4 A + \cot^2 A = 1$ है तो $\cos^4 A - 3\cos^2 A$ का मान है: (CHSL MAINS 2023)

[a]−1 [b]−2 [c]2 [d]1

77. If $0^0 < \theta < 90^0$ and $\text{cosec}\ \theta = \cot^2\theta$, then the value of expression $\text{cosec}^4\theta - 2\text{cosec}^3\theta + \cot^2\theta$ is equal to:

a)2 b)0 c)1 d)3

78. If $sec\theta = 4x$ and $\tan\theta = \frac{4}{x}$,, $(x \neq 0)$ then the value of $12(x^2 - \frac{1}{x^2})$ is:

यदि $sec\theta = 4x$ और $\tan\theta = \frac{4}{x}$,, $(x \neq 0)$ है तो $12(x^2 - \frac{1}{x^2})$ का मान है:

a) $\frac{1}{2}$

b) $\frac{2}{3}$

c) 1

d) $\frac{3}{4}$

79. If $sec\,\theta = 8x$, $tan\,\theta = \frac{1}{8x}$, then $64x^2 + \frac{1}{64x^2}$ =?

(a) 1 (b)2

(c)$\sqrt{5}$ (d)$\sqrt{17}$

80. If $sec\theta = 3x$ & $tan\theta = \frac{1}{2x}$, then find $4x^2 + \frac{1}{9x^2}$?

यदि $sec\theta = 3x$ & $tan\theta = \frac{1}{2x}$ है, तो $4x^2 + \frac{1}{9x^2}$ ज्ञात कीजिये?

A) 10

B) $\frac{9}{4}\sqrt{10}$

C) $\frac{4}{9}\sqrt{10}$

D) $\sqrt{10}$

81. If secA + tanA = 5, then secA – tanA = ?

यदि secA + tanA = 5, then secA – tanA = ?

(a) 5/2

(b) 1/5

(c)5

(d) 2/5

82. If $\frac{1-cos\theta}{sin\theta} = \frac{2}{7}$, then what will be the value of $\frac{1+cos\theta}{sin\theta}$?

यदि $\frac{1-cos\theta}{sin\theta} = \frac{2}{7}$, तो $\frac{1+cos\theta}{sin\theta}$ का मान क्या होगा?

A) 5

B) 2/7

C) 3.5

D) 1/5

83. If sec x + tan x = 5 and cosec y – cot y = 1/3, then find the value of (sec x + cosec y) – (tanx–coty).

यदि sec x + tan x = 5 and cosec y – cot y = 1/3, तो (sec x + cosec y) – (tanx–coty) का मान ज्ञात कीजिए।

(a) 2.2

(b) 3.2

(c) 4.2

(d) 3.1 SSC CHSL TIER – I 2022

84. If 1 + sinθ = mcosθ, then what is the value of sinθ?

यदि 1 + sinθ = mcosθ है तो sinθ का मान क्या होगा?

(a) $\frac{2m^2-1}{m^2+1}$

(b) $\frac{m^2-1}{m^2+1}$

(c) $\frac{m^2+1}{2m^2-1}$

(d) $\frac{2m^2-1}{m^2-1}$ (SSC CGL 2022)

85. If secθ-tanθ = $\frac{x}{y}$, (0<x<y) and (0°<θ<90°), then sin θ is equal to:-

यदि $sec\theta - tan\theta = \frac{x}{y}$, (0 < x < y) और $0° < \theta < 90°$ है, तो $\sin\theta$ का मान ज्ञात कीजिए:

a) $\frac{x^2+y^2}{2xy}$ b) $\frac{2xy}{x^2+y^2}$ c) $\frac{y^2-x^2}{x^2+y^2}$ d) $\frac{x^2+y^2}{y^2-x^2}$

86. If $tan\theta + sec\theta = 3, then\ find\ 3tan\theta + 9sec\theta$?

यदि tanθ+secθ=3, तो 3tanθ+9secθ ज्ञात कीजिये?

A) 15 C) 17

B) 19 d) 21

87. If $\sec\theta + \tan\theta = \frac{1}{\sqrt{3}}$, then the positive value of $\cot\theta + \cos\theta$ is:

यदि $\sec\theta + \tan\theta = \frac{1}{\sqrt{3}}$ तो $\cot\theta + \cos\theta$ का धनात्मक मान ज्ञात कीजिए।

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{2}{3\sqrt{3}}$ (c) $\frac{3\sqrt{3}}{2}$ (d) $\frac{2}{\sqrt{3}}$

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88. If $sec\theta + tan\theta = 7 + 4\sqrt{3}$ then $cot\theta$ =?

(a) $4\sqrt{3}$ (b) $1/4\sqrt{3}$

(c) 1/7 (d) $7/4\sqrt{3}$

89. If $sec\theta + tan\theta = \sqrt{21 + \sqrt{21 - \sqrt{21 + \sqrt{21 - \ldots\infty}}}}$

Then $sin\theta + cos\theta$ =?

(a)17/13 (b) 17/21

(c)13/21 (d) 21/13

90. If $cosec\theta - cot\theta = m$, then what is $cosec\theta$ equal to ?

यदि $cosec\theta - cot\theta = m$ है तो $cosec\theta$ किसके बराबर होगा ?

(A) $m + \frac{1}{m}$ (B) $m - \frac{1}{m}$ (C) $\frac{m}{2} + \frac{2}{m}$ (D) $\frac{m}{2} + \frac{1}{2m}$

91. If $cosecA + cotA = a\sqrt{b}$, then find $\frac{a^2b-1}{a^2b+1}$?

यदि $cosecA + cotA = a\sqrt{b}$, तो $\frac{a^2b-1}{a^2b+1}$ ज्ञात करें?

A) CosA

B) TanA

C) 1/sinA

D) 1/cotA

92. If cosecθ - cotθ = $\frac{7}{2}$, then value of sinθ=?

a)$\frac{47}{28}$ b)$\frac{28}{51}$ c)$\frac{28}{53}$ d)$\frac{28}{49}$

93. If $\text{cosec}\ \theta + cot\ \theta = 3 + 2\sqrt{2}$, then $sin\theta + cos\theta$ =?

(a)$\sqrt{2}$ (b) $\frac{2\sqrt{2}-1}{3}$

(c)$\frac{1}{2\sqrt{2}}$ (d) $\frac{1+2\sqrt{2}}{3}$

94. If secθ = x + $\frac{1}{4x}$ then $\sqrt{\frac{1+sin\theta}{1-sin\theta}}$ = ?

(a)2x , $-\frac{1}{2x}$ (b) 2x , $\frac{1}{2x}$

(c)2x (d) $\frac{1}{2x}$

95. If $cosec\theta = 4x + \frac{1}{16x}$, then cosec θ + cotθ =?

(a)4x (b)8x

(c)$\frac{1}{8x}$ (d)$8x$ & $\frac{1}{8x}$

96. If $\frac{1+sin\emptyset}{1-sin\emptyset}=\frac{p^2}{q^2}$, then $sec\emptyset$ is equal to:

यदि $\frac{1+sin\emptyset}{1-sin\emptyset}=\frac{p^2}{q^2}$, तो $sec\emptyset$ बराबर है :

a) $\frac{p^2q^2}{p^2+q^2}$ b) $\frac{1}{2}\left(\frac{q}{p}+\frac{p}{q}\right)$

c) $\frac{2p^2q^2}{p^2+q^2}$ d) $\frac{1}{p^2}+\frac{1}{q^2}$

97. If $sec\,\theta+tan\,\theta=P$, then $\frac{P^2+1}{P^2-1}$ =?

(a)$sin\,\theta$ (b)cosecθ

(c)$tan\,\theta$ (d)$cot\,\theta$

98. If $sec\theta+tan\theta=k, 0°<\theta<90°, then\ find\ \frac{(k-1)^2-2}{(k+1)^2-2k}$?

यदि $sec\theta+tan\theta=k, 0°<\theta<90°$है, तो $\frac{(k-1)^2-2}{(k+1)^2-2k}$ ज्ञात कीजिये?

A) $sin\theta-cos\theta$ C) $sin\theta+cos\theta$

B) $sec\theta cosec\theta$ D) $sin\theta cos\theta$

99. If a SecA + b tanA = c, then a tanA +b secA is equal to:

यदि a SecA + b tanA = c है, तो a tanA + b secA का मान क्या है?

(a) $\pm\sqrt{c^2-b^2+a^2}$ (b)$\pm\sqrt{a^2+b^2-c^2}$

(c) $\pm\sqrt{a^2+b^2+c^2}$ (d) $\pm\sqrt{c^2-a^2+b^2}$

100. If $5\,sec\,\theta-6\,tan\,\theta=7$ then $5\,tan\,\theta-6\,sec\,\theta$ =?

(a) $\pm 2\sqrt{15}$ (b) ± 7

(c) $\pm\sqrt{38}$ (d) None

101. If 29 secθ–21 tanθ = 20 then 29 tanθ – 21 secθ = ?

(a) 0 (b)29 (c)21 (d) 20

102. 5secθ – 4tanθ = 3cosecθ, then find the value of $\frac{27cot\theta}{5tan\theta-4sec\theta}$ =?

a) 5 b) 9 c) 7 d) 6

103. If $25cosecA+7cotA=12\sqrt{5}$, then find $\frac{7+25cosA}{sinA}$?

यदि $25cosecA+7cotA=12\sqrt{5}$ है, तो $\frac{7+25cosA}{sinA}$ ज्ञात करें?

A) ± 12

B) $+12$

C) -12

D) *None of these*

104. If (x^2+y^2)secθ + (x^2-y^2)tanθ = 9 and (x^2+y^2)tanθ + (x^2-y^2)secθ = 5, then $3x^2y^2$= ?

a) 36 b) 42 c) 39.75 d) 48

105. If $5+12tan\theta=sec\theta$ & $12-5tan\theta=ksec\theta$, then find k^2?

यदि $5+12tan\theta=sec\theta$ & $12-5tan\theta=ksec\theta$ है, तो k^2 ज्ञात कीजिये?

A) 101

B) 27

C) 168

D) 99

106. If $61\,sec\,\theta - 60\,tan\,\theta = 11$, Then find $sin^4\,\theta - cos^4\,\theta$ =?

(a) $\frac{3137}{3721}$ (b) $\frac{3479}{3721}$
(c) $\frac{3765}{3475}$ (d) $\frac{3087}{3721}$

107. $(1+x^2)\sec\theta - 2x\tan\theta = (1-x^2)$, then $\operatorname{cosec}\theta$=?

a) $\frac{1-x^2}{2x}$ b) $\frac{1+x^2}{2x}$ c) $\frac{1+x^2}{1-x^2}$ d) $\frac{2x}{1-x^2}$

108. If $a^2\operatorname{cosec}^2\theta - b^2\,cot^2\,\theta = 7$ and $a\ \operatorname{cosec}\ \theta + b\,cot\,\theta = 1$, $then\ a^2(b^2+9)$ =?

(a) 14 b^2 (b) 16 b^2
(c) 25 b^2 (d) 10 b^2

109. If $\sec\theta$ and $\sin\theta(0 < \theta < 90)$ are the roots of the equation $\sqrt{6}x^2 - kx + \sqrt{6} = 0$, then the value of k is:

यदि $\sec\theta$ और $\sin\theta$, $(0 < \theta < 90)$, समीकरण $\sqrt{6}x^2 - kx + \sqrt{6} = 0$ की जड़ें हैं, तो "k" का मान है:

(a) $\sqrt{3}$ (b) $3\sqrt{2}$ (c) $2\sqrt{3}$ (d) $3\sqrt{3}$