CDS 1 2025

LIVE

MATHS

TRIGONOMETRY - 1

MCQS

NAVJYOTI SIR

Crack
EXAMS

13 Feb 2025 Live Classes Schedule

9:00AM	13 FEBRUARY 2025 DAILY DEFENCE UPDATES	DIVYANSHU SIR
10:00AM	13 FEBRUARY 2025 DAILY CURRENT AFFAIRS	RUBY MA'AM

SSB INTERVIEW LIVE CLASSES

9:30AM	OVERVIEW OF GROUP TASKS	ANURADHA MA'AM

AFCAT 1 2025 LIVE CLASSES

3:00PM	STATIC GK - POLITY	DIVYANSHU SIR
4:30PM	ENGLISH - COMPREHENSION - CLASS 1	ANURADHA MA'AM

NDA 1 2025 LIVE CLASSES

10:00AM	MATHS - DERIVATIVES	NAVJYOTI SIR
11:30AM	PHYSICAL GEOGRAPHY - CLASS 1	RUBY MA'AM
1:00PM	BIOLOGY - CLASS 4	SHIVANGI MA'AM
4:30PM	ENGLISH - COMPREHENSION - CLASS 1	ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

11:30AM	PHYSICAL GEOGRAPHY - CLASS 1	RUBY MA'AM
1:00PM	BIOLOGY - CLASS 4	SHIVANGI MA'AM
4:30PM	ENGLISH - COMPREHENSION - CLASS 1	ANURADHA MA'AM
5:30PM	MATHS - TRIGONOMETRY - CLASS 1	NAVJYOTI SIR

If $3 \sin \theta + 5 \cos \theta = 5$, then what is the value of $5 \sin \theta - 3 \cos \theta$?

PYQ – 24 – I

(a) -3

(b) -2

(c) 5

(d) 8

$3 \sin(0^\circ) + 5 \cos(0^\circ) = 3(0) + 5(1) = 0 + 5 = 5$

$\Rightarrow \quad \theta = 0^\circ$

$5 \sin(0^\circ) - 3 \cos(0^\circ)$

$= 0 - 3(1) = \underline{-3}$

PYQ – 24 – I

If $3 \sin \theta + 5 \cos \theta = 5$, then what is the value of $5 \sin \theta - 3 \cos \theta$?

(a) -3

(b) -2

(c) 5

(d) 8

Ans: (a)

PYQ – 24 – I

What is the minimum value of $\frac{\sin^2 A + 5\sin A + 1}{\sin A}$ for $0 < A \leq \frac{\pi}{2}$?

(a) 3

(b) 5

(c) 7

(d) 9

$\sin A + 5 + \frac{1}{\sin A}$

$\left(\sin A + \frac{1}{\sin A}\right) + 5$

$2 + 5 = 7$

$x + \frac{1}{x}$ ←

(minimum value = 2, when $x = 1$)

PYQ – 24 – I

What is the minimum value of $\frac{\sin^2 A + 5\sin A + 1}{\sin A}$ for $0 < A \leq \frac{\pi}{2}$?

(a) 3

(b) 5

(c) 7

(d) 9

Ans: (c)

PYQ – 24 – I

If tan (3A) = cot (A – 22°), where 3A is an acute angle, then what is the value of A ?

(a) 25°

(b) 27°

(c) 28°

(d) 30°

$$\tan(3A) = \tan\left(90^\circ - (A - 22^\circ)\right)$$

$$3A = 90^\circ - A + 22^\circ$$

$$4A = 112^\circ$$

$$A = 28^\circ$$

PYQ – 24 – I

If $\tan(3A) = \cot(A - 22°)$, where 3A is an acute angle, then what is the value of A ?

(a) 25°

(b) 27°

(c) 28°

(d) 30°

Ans: (c)

If $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = p\sec\theta + q\tan\theta$,

where $0 < \theta < \frac{\pi}{2}$, then what is $p + q$ equal to ?

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

PYQ – 24 – I

Let $\theta = 45^\circ$

$$LHS = \frac{\sin 45^\circ - \cos 45^\circ + 1}{\sin 45^\circ + \cos 45^\circ - 1} = \frac{\frac{1}{\sqrt{2}} - \frac{1}{\sqrt{2}} + 1}{\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} - 1} = \frac{1}{\sqrt{2} - 1}$$

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

$$RHS = p\sec 45^\circ + q\tan 45^\circ = p\sqrt{2} + q$$

$p = 1 ; q = 1$

$p + q = 2$

PYQ – 24 – I

If $\frac{\sin\theta - \cos\theta + 1}{\sin\theta + \cos\theta - 1} = p\sec\theta + q\tan\theta$,

where $0 < \theta < \frac{\pi}{2}$, then what is $p + q$ equal to ?

(a) 0

(b) 1

(c) 2

(d) 4

Ans: (c)

PYQ – 24 – I

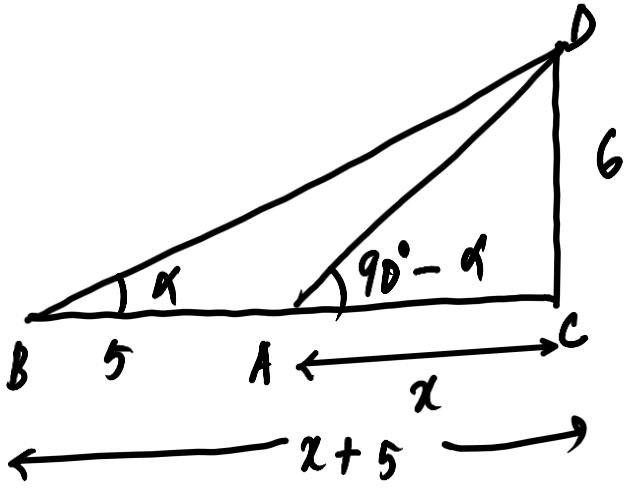
The angles of elevation of the top of a tower from two points A and B at a distance of x m and (x + 5) m from the base of the tower of height 6 m and in the same straight line with it are complementary. What is the value of x ?

(a) 4 m

(b) 5 m

(c) 6 m

(d) 9 m



$\triangle ACD$,

$\tan(90° - \alpha) = \frac{6}{x}$

$\cot\alpha = \frac{6}{x}$ — (1)

$\triangle BCD$,

$\tan\alpha = \frac{6}{x+5}$ — (2)

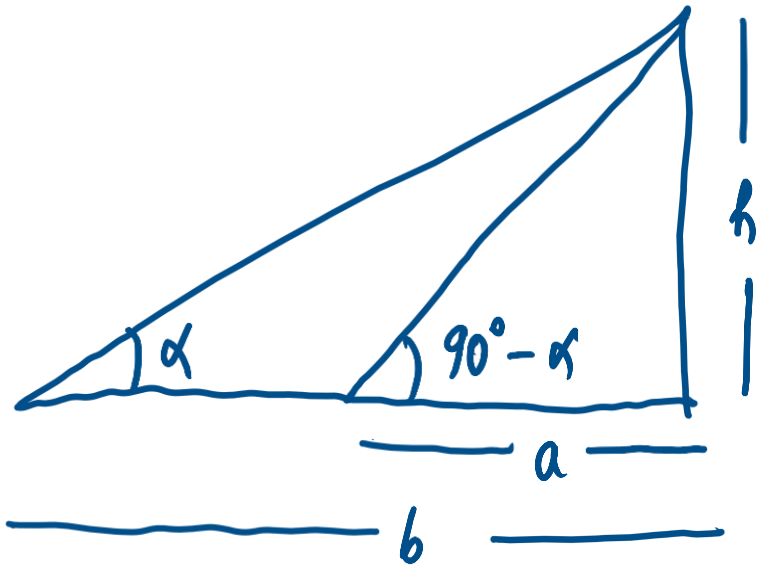
(1) × (2),

$\cot\alpha \cdot \tan\alpha = \left(\frac{6}{x}\right)\left(\frac{6}{x+5}\right)$

$1 = \frac{36}{x(x+5)}$

$x(x+5) = 36$

(a) $4(4+5) = 4 \times 9$ — ✓



$$h^2 = ab$$

PYQ – 24 – I

The angles of elevation of the top of a tower from two points A and B at a distance of x m and (x + 5) m from the base of the tower of height 6 m and in the same straight line with it are complementary. What is the value of x ?

(a) 4 m

(b) 5 m

(c) 6 m

(d) 9 m

Ans: (a)

PYQ – 24 – I

Consider the following statements :

1. In a triangle ABC, if $\sin A + \sin B + \sin C = \frac{3\sqrt{3}}{2}$, then the triangle can be equilateral.
2. In a triangle ABC, if $\cos A + \cos B + \cos C = \frac{3}{2}$, then the triangle can be equilateral.

Which of the statements given above is/are correct ?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

$A = B = C = 60^\circ$

(1) $\sin 60^\circ + \sin 60^\circ + \sin 60^\circ = \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2}$

$= \frac{3\sqrt{3}}{2}$

(2) $\cos 60^\circ + \cos 60^\circ + \cos 60^\circ = \frac{1}{2} + \frac{1}{2} + \frac{1}{2} = \frac{3}{2}$

PYQ – 24 – I

Consider the following statements :

1. In a triangle ABC, if $\sin A + \sin B + \sin C = \frac{3\sqrt{3}}{2}$, then the triangle can be equilateral.

2. In a triangle ABC, if $\cos A + \cos B + \cos C = \frac{3}{2}$, then the triangle can be equilateral.

Which of the statements given above is/are correct ?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Ans: (c)

Q) If $\theta + \phi = \frac{\pi}{6}$, what is the value of $(\sqrt{3} + \tan\theta)$

$(\sqrt{3} + \tan\phi)$?

(a) 1 (b) -1 (c) 4 (d) -4

$$(\sqrt{3} + \tan\theta)(\sqrt{3} + \tan\phi) = 3 + \sqrt{3}\tan\phi + \sqrt{3}\tan\theta + \tan\theta\tan\phi$$

$$\theta + \phi = \frac{\pi}{6}$$

$$\tan(\theta + \phi) = \tan\frac{\pi}{6}$$

$$\frac{\tan\theta + \tan\phi}{1 - \tan\theta\tan\phi} = \frac{1}{\sqrt{3}}$$

$$\sqrt{3}\tan\theta + \sqrt{3}\tan\phi = 1 - \tan\theta\tan\phi$$

$$\sqrt{3}\tan\theta + \sqrt{3}\tan\phi + \tan\theta\tan\phi = 1$$

$$3 + 1 = 4$$

Q) If $\theta + \phi = \frac{\pi}{6}$, what is the value of $(\sqrt{3} + \tan\theta)$ $(\sqrt{3} + \tan\phi)$?

(a) 1 (b) -1 (c) 4 (d) -4

Ans: (c)

Q) If $\sec\theta + \tan\theta = x$, then $\sec\theta = ?$

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

$\sec\theta + \tan\theta = x$ — (1)

$$(\sec\theta + \tan\theta) \times \frac{(\sec\theta - \tan\theta)}{\sec\theta - \tan\theta} = x$$

$1 + \tan^2\theta = \sec^2\theta$

$$\frac{\sec^2\theta - \tan^2\theta}{\sec\theta - \tan\theta} = x$$

$$\frac{1}{\sec\theta - \tan\theta} = x \Rightarrow \sec\theta - \tan\theta = \frac{1}{x} \text{ — (2)}$$

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

$$\sec\theta - \tan\theta = \frac{1}{x}$$

$$+ \quad \text{———————————}$$

$$2\sec\theta = x + \frac{1}{x}$$

$$\sec\theta = \frac{x^2+1}{2x}$$

Q) If $\sec\theta + \tan\theta = x$, then $\sec\theta = ?$

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

Ans: (b)

Q) If $\cos^4\theta - \sin^4\theta = \frac{2}{3}$, then the value of $2\cos^2\theta - 1$ is

(a) 0 (b) 1 (c) $\frac{2}{3}$ (d) $\frac{3}{2}$

$$(\cos^2\theta)^2 - (\sin^2\theta)^2 = \frac{2}{3}$$

$$(\cos^2\theta + \sin^2\theta)(\cos^2\theta - \sin^2\theta) = \frac{2}{3}$$

$$\cos^2\theta - \sin^2\theta = \frac{2}{3} \qquad \cos 2\theta$$

$$2\cos^2\theta - 1 = \frac{2}{3}$$

Q) If $\cos^4\theta - \sin^4\theta = \frac{2}{3}$, then the value of $2\cos^2\theta - 1$ is

(a) 0 (b) 1 (c) $\frac{2}{3}$ (d) $\frac{3}{2}$

Ans: (c)

Q) What is the value of

$$\sin^2 15^\circ + \sin^2 20^\circ + \sin^2 25^\circ + \ldots + \sin^2 75^\circ?$$

(a) $\tan^2 15^\circ + \tan^2 20^\circ + \tan^2 25^\circ + \ldots + \tan^2 75^\circ$
(b) $\cos^2 15^\circ + \cos^2 20^\circ + \cos^2 25^\circ + \ldots + \cos^2 75^\circ$
(c) $\cot^2 15^\circ - \cot^2 20^\circ + \cot^2 25^\circ - \ldots + \cot^2 75^\circ$
(d) $\sec^2 15^\circ + \sec^2 20^\circ + \sec^2 25^\circ + \ldots + \sec^2 75^\circ$

$\cos^2(90^\circ - 15^\circ) + \cos^2(90^\circ - 20^\circ) + \cos^2(90^\circ - 25^\circ) + \ldots \cos^2(90^\circ - 75^\circ)$

$\cos^2 75^\circ + \cos^2 70^\circ + \cos^2 65^\circ + \ldots \cos^2 15^\circ$

Q) What is the value of

$$\sin^{12} 15° + \sin^2 20° + \sin^2 25° + \ldots + \sin^2 75°?$$

(a) $\tan^2 15° + \tan^2 20° + \tan^2 25° + \ldots + \tan^2 75°$
(b) $\cos^2 15° + \cos^2 20° + \cos^2 25° + \ldots + \cos^2 75°$
(c) $\cot^2 15° - \cot^2 20° + \cot^2 25° - \ldots + \cot^2 75°$
(d) $\sec^2 15° + \sec^2 20° + \sec^2 25° + \ldots + \sec^2 75°$

Ans: (b)

Q) If $\operatorname{cosec} 39^\circ = x$, the value of $\dfrac{1}{\operatorname{cosec}^2 51^\circ} + \sin^2 39^\circ + \tan^2 51^\circ - \dfrac{1}{\sin^2 51^\circ \sec^2 39^\circ}$ is

$$\left(\sin^2 51^\circ + \cos^2 51^\circ\right) + \left(\sec^2 51^\circ - 1\right) - \frac{1}{\sin^2 51^\circ \operatorname{cosec}^2 51^\circ}$$

$$1 + \operatorname{cosec}^2(39^\circ) - 1 - \frac{1}{1}$$

$$1 + x^2 - 1 - 1$$

$$x^2 - 1 \quad //$$

Q) If $\sec\theta = x + \frac{1}{4x}$ $(0° < \theta < 90°)$, then $\sec\theta + \tan\theta$ is equal to

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

$\sec\theta = x + \frac{1}{4x}$

$\sec\theta = \frac{4x^2+1}{4x}$

$\sec^2\theta = \frac{16x^4+1+8x^2}{16x^2}$

$\sec^2\theta = x^2 + \frac{1}{2} + \frac{1}{16x^2}$

$1 + \tan^2\theta = x^2 + \frac{1}{2} + \frac{1}{16x^2}$

$\tan^2\theta = x^2 + \frac{1}{16x^2} - \frac{1}{2} = \left(x - \frac{1}{4x}\right)^2$

$$\tan^2\theta = \left(x - \frac{1}{4x}\right)^2$$

$$\tan\theta = x - \frac{1}{4x}$$

$$\sec\theta + \tan\theta = \left(x + \frac{1}{4x}\right) + \left(x - \frac{1}{4x}\right) = 2x$$

Q) If $\sec\theta = x + \frac{1}{4x}$ $(0° < \theta < 90°)$, then $\sec\theta + \tan\theta$ is equal to

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

Ans: (b)

Q) If $x = a\sec\theta\cos\phi$, $y = b\sec\theta\sin\phi$, $z = c\tan\theta$, then, the value of $\frac{x^2}{a^2}+\frac{y^2}{b^2}-\frac{z^2}{c^2}$ is :

(a) 1 (b) 4 (c) 9 (d) 0

$$\frac{a^2\sec^2\theta\cos^2\phi}{a^2} + \frac{b^2\sec^2\theta\sin^2\phi}{b^2} - \frac{c^2\tan^2\theta}{c^2}$$

$$\sec^2\theta\left(\cos^2\phi + \sin^2\phi\right) - \tan^2\theta$$

$$\sec^2\theta - \tan^2\theta = 1$$

Q) If $x = a\sec\theta\cos\phi$, $y = b\sec\theta\sin\phi$, $z = c\tan\theta$, then, the value of $\frac{x^2}{a^2}+\frac{y^2}{b^2}-\frac{z^2}{c^2}$ is :

(a) 1 (b) 4 (c) 9 (d) 0

Ans: (a)

Q) If $2y\cos\theta = x\sin\theta$ and $2x\sec\theta - y\operatorname{cosec}\theta = 3$, then the relation between x and y is

(a) $2x^2+y^2=2$ (b) $x^2+4y^2=4$

(c) $x^2+4y^2=1$ (d) $4x^2+y^2=4$

$$\frac{2y}{\sin\theta} = \frac{x}{\cos\theta}$$

$$2y\operatorname{cosec}\theta = x\sec\theta$$

$$y\operatorname{cosec}\theta = \frac{1}{2}(x\sec\theta)$$

$$2x\sec\theta - \frac{1}{2}x\sec\theta = 3$$

$$4x\sec\theta - x\sec\theta = 6$$

$$3x\sec\theta = 6$$

$$\sec\theta = \frac{6}{3x} \Rightarrow \cos\theta = \frac{x}{2} \quad \text{— (1)}$$

$$y\,\text{cosec}\,\theta = \frac{1}{2}(x\sec\theta)$$

$$y\,\text{cosec}\,\theta = \frac{1}{2}\left(x \times \frac{6}{3x}\right)$$

$$y\,\text{cosec}\,\theta = 1$$

$$\sin\theta = y \quad \text{—— (2)}$$

(1) & (2),

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

$$\left\{\begin{array}{l} \dfrac{x^2}{4} + y^2 = 1 \\ x^2 + 4y^2 = 4 \end{array}\right.$$

Q) If $2y\cos\theta = x\sin\theta$ and $2x\sec\theta - y\operatorname{cosec}\theta = 3$, then the relation between x and y is

(a) $2x^2 + y^2 = 2$

(b) $x^2 + 4y^2 = 4$

(c) $x^2 + 4y^2 = 1$

(d) $4x^2 + y^2 = 4$

Ans: (b)

Q) If $\sin^2\alpha = \cos^3\alpha$, then the value of $(\cot^6\alpha - \cot^2\alpha)$ is

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

$\cot^2\alpha \cdot \cos\alpha = 1$

$\cot^2\alpha = \sec\alpha$

$\tan^2\alpha = \frac{1}{\sec\alpha} = \cos\alpha$

$\cot^2\alpha \left(\cot^4\alpha - 1\right)$

$\sec\alpha \left(\sec^2\alpha - 1\right)$

$\sec\alpha \left(\tan^2\alpha\right)$

$\sec\alpha \left(\cos\alpha\right) = 1$

Q) If $\sin^2\alpha = \cos^3\alpha$, then the value of $(\cot^6\alpha - \cot^2\alpha)$ is

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

Ans: (a)

Q) If $p = \cot\theta + \tan\theta$ and $q = \sec\theta - \cos\theta$, then

$(p^2q)^{\frac{2}{3}} - (q^2p)^{\frac{2}{3}}$ is equal to

(a) 0 (b) 1

(c) 2 (d) 3

Q)If $p = \cot\theta + \tan\theta$ and $q = \sec\theta - \cos\theta$, then

$(p^2 p)^{\frac{2}{3}} (q^2 p)^{\frac{2}{3}}$ is equal to

(a) 0 (b) 1

(c) 2 (d) 3

Ans: (b)

Q) If $\frac{\cos x}{1+\operatorname{cosec} x}+\frac{\cos x}{\operatorname{cosec} x-1}=2$, then which one of the following is one of the values of x?

(a) $\frac{\pi}{2}$

(b) $\frac{\pi}{3}$

(c) $\frac{\pi}{4}$

(d) $\frac{\pi}{6}$

Q) If $\frac{\cos x}{1+\operatorname{cosec} x}+\frac{\cos x}{\operatorname{cosec} x-1}=2$, then which one of the following is one of the values of x?

(a) $\frac{\pi}{2}$ (b) $\frac{\pi}{3}$

(c) $\frac{\pi}{4}$ (d) $\frac{\pi}{6}$

Ans: (c)

Q) If $1 + \tan\theta = \sqrt{2}$, then what is the value of $\cot\theta - 1$?

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

(b) $\sqrt{2}$

(c) 2

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

Q) If $1 + \tan\theta = \sqrt{2}$, then what is the value of $\cot\theta - 1$?

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

(b) $\sqrt{2}$

(c) 2

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

Ans: (b)

Q) Consider the following statements :

1. $\sin 66^\circ$ is less than $\cos 66^\circ$
2. $\sin 26^\circ$ is less than $\cos 26^\circ$

Which of the above statements is/are correct ?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Q) Consider the following statements :

1. $\sin 66^\circ$ is less than $\cos 66^\circ$
2. $\sin 26^\circ$ is less than $\cos 26^\circ$

Which of the above statements is/are correct ?

(a) 1 only (b) 2 only

(c) Both 1 and 2 (d) Neither 1 nor 2

Ans: (b)

Q) If $\sin\theta + \cos\theta = a$ and $\dfrac{\sin\theta + \cos\theta}{\sin\theta\cos\theta} = b$, then

(a) $b = \dfrac{2a}{a^2 - 1}$

(b) $a = \dfrac{2b}{b^2 - 1}$

(c) $ab = b^2 - 1$

(d) $a + b = 1$

Q) If $\sin\theta+\cos\theta=a$ and $\dfrac{\sin\theta+\cos\theta}{\sin\theta\cos\theta}=b$, then

(a) $b=\dfrac{2a}{a^2-1}$

(b) $a=\dfrac{2b}{b^2-1}$

(c) $ab=b^2-1$

(d) $a+b=1$

Ans: (a)

Q) The value of $(\sin^2 7\frac{1}{2}^\circ + \cos^2 7\frac{1}{2}^\circ) - (\sin^2 30^\circ + \cos^2 30^\circ) + (\sin^2 7^\circ + \sin^2 83^\circ)$ is equal to

(a) 3

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

(c) 2

(d) 1

Q) The value of $(\sin^2 7\frac{1}{2}^\circ + \cos^2 7\frac{1}{2}^\circ) - (\sin^2 30^\circ + \cos^2 30^\circ) + (\sin^2 7^\circ + \sin^2 83^\circ)$ is equal to

(a) 3

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

(c) 2

(d) 1

Ans: (d)

Q) If $x = p\sec\theta$ and $y = q\tan\theta$ then

(a) $x^2 - y^2 = p^2q^2$

(b) $x^2q^2 - y^2p^2 = pq$

(c) $x^2q^2 - y^2p^2 = \dfrac{1}{p^2q^2}$

(d) $x^2q^2 - y^2p^2 = p^2q^2$

Q) If $x = p\sec\theta$ and $y = q\tan\theta$ then

(a) $x^2 - y^2 = p^2q^2$ (b) $x^2q^2 - y^2p^2 = pq$

(c) $x^2q^2 - y^2p^2 = \frac{1}{p^2q^2}$ (d) $x^2q^2 - y^2p^2 = p^2q^2$

Ans: (d)

Q) If $\sin\alpha + \cos\beta = 2\ (0° \le \beta < \alpha \le 90°)$, then $\sin\left(\frac{2\alpha+\beta}{3}\right) =$

(a) $\sin\frac{\alpha}{2}$

(b) $\cos\frac{\alpha}{3}$

(c) $\sin\frac{\alpha}{3}$

(d) $\cos\frac{2\alpha}{3}$

Q) If $\sin\alpha + \cos\beta = 2\ (0° \leq \beta < \alpha \leq 90°)$, then $\sin\left(\frac{2\alpha+\beta}{3}\right) =$

(a) $\sin\frac{\alpha}{2}$

(b) $\cos\frac{\alpha}{3}$

(c) $\sin\frac{\alpha}{3}$

(d) $\cos\frac{2\alpha}{3}$

Ans: (b)

Q) If $\sec x \operatorname{cosec} x = 2$, then what is $\tan^n x + \cot^n x$ equal to?

(a) 2
(b) 2^{n+1}
(c) 2n
(d) 2^{n-1}

Q) If $\sec x \operatorname{cosec} x = 2$, then what is $\tan^n x + \cot^n x$ equal to?

(a) 2
(b) 2^{n+1}
(c) 2n
(d) 2^{n-1}

Ans: (a)

Q) If $7\sin^2 x + 3\cos^2 x = 4, 0 < x < 90°$, then what is the value of $\tan x$?

(a) $\sqrt{2}$

(b) 1

(c) $\frac{\sqrt{3}}{2}$

(d) $\frac{1}{\sqrt{3}}$

Q) If $7\sin^2 x + 3\cos^2 x = 4, 0 < x < 90°$, then what is the value of $\tan x$?

(a) $\sqrt{2}$

(b) 1

(c) $\frac{\sqrt{3}}{2}$

(d) $\frac{1}{\sqrt{3}}$

Ans: (d)

Q) If $\tan\theta + \cot\theta = \frac{4}{\sqrt{3}}$, where $0<\theta<\frac{\pi}{2}$, then $\sin\theta + \cos\theta$ is equal to

(a) 1

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

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

(d) $\sqrt{2}$

Q) If $\tan\theta + \cot\theta = \frac{4}{\sqrt{3}}$, where $0<\theta<\frac{\pi}{2}$, then $\sin\theta + \cos\theta$ is equal to

(a) 1

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

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

(d) $\sqrt{2}$

Ans: (c)

Q) If $\tan^2 x + \frac{1}{\tan^2 x} = 2$ and $0° < x < 90°$, then what is the value of x ?

(a) 15°
(b) 30°
(c) 45°
(d) 60°

Q) If $\tan^2 x + \frac{1}{\tan^2 x} = 2$ and $0° < x < 90°$, then what is the value of x ?

(a) 15°
(b) 30°
(c) 45°
(d) 60°

Ans: (c)

Q) If $p = \sqrt{\frac{1-\sin x}{1+\sin x}}, q = \frac{1-\sin x}{\cos x}, r = \frac{\cos x}{1+\sin x}$

then which of the following is/are correct ?

1. $p = q = r$
2. $p^2 = qr$

Select the correct answer using the code given below.

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

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Ans: (c)

Q) If $\sin x + \cos x = p$ and $\sin^3 x + \cos^3 x = q$, then what is $p^3 - 3p$ equal to ?

(a) 0
(b) $-2q$
(c) $2q$
(d) $4q$

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Ans: (b)

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