6. ANGLES IN QUADRANTS ①

Class: VIII. MATHEMATICS

FOUNDATION. SOLUTIONS

2025|26

TEACHING TASK

JEE MAINS LEVEL

01. $\sin\alpha + \operatorname{cosec}\alpha = 2$

$\Rightarrow \alpha = 90^\circ$

$\therefore \sin^n 90^\circ + \operatorname{cosec}^n 90^\circ = (1)^n + (1)^n = 2$

Ans: C

02 $\tan(2\times 360^\circ + 135^\circ) = \tan 135^\circ = \tan(180^\circ - 45^\circ)$

$= -\tan 45^\circ = -1$

Ans: B

03 $\sin(n\pi - \theta) = (-1)^{n+1}\sin\theta$

Sine, If $n=1 \Rightarrow \sin(\pi - \theta) = \sin\theta$

$(-1)^{n+1}\sin\theta = (-1)^{1+1}\sin\theta = \sin\theta$ ✓

If $n=2 \Rightarrow \sin(2\pi - \theta) = -\sin\theta$

$(-1)^{n+1}\sin\theta = (-1)^{2+1}\sin\theta = -\sin\theta$ ✓

Ans: A

04 $\cos\left((2n+1)\frac{\pi}{2} - \theta\right) = (-1)^n \sin\theta$

Sine, $n=1 \Rightarrow \cos\left(\frac{3\pi}{2} - \theta\right) = -\sin\theta$

$(-1)^n \sin\theta = (-1)^1 \sin\theta = -\sin\theta$

$n=2 \Rightarrow \cos\left(\frac{5\pi}{2} - \theta\right) = \cos(450^\circ - \theta)$

$= \cos(360^\circ + (90^\circ - \theta)) = \cos(90^\circ - \theta) = \sin\theta = (-1)^2 \sin\theta$

Ans: B

05 $\cot\alpha = \cot\left(\theta - \frac{13\pi}{2}\right) =$

$= -\cot\left(\frac{13\pi}{2} - \theta\right) = -\cot(1170^\circ - \theta)$

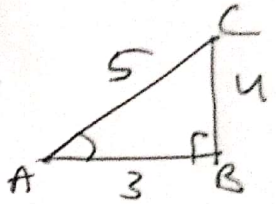
$= -\cot(3\times 360^\circ + 90^\circ - \theta) = -\cot(90^\circ - \theta)$

$= -\tan\theta$ Ans: C

06 $\sin\theta = \frac{4}{5} > 0$

$\sin\theta$ is positive $\Rightarrow \theta \in Q_1$ or Q_2

Given $\theta \notin Q_1 \Rightarrow \theta \in Q_2$



$\cos\theta = -\frac{3}{5}$ Ans: C

07 Complement of $\theta = 90^\circ - \theta$

Suplement of $\theta = 180^\circ - \theta$

Sum $= 270^\circ - 2\theta = \frac{3\pi}{2} - 2\theta$ Ans: D

08 $\frac{\sin\left(\frac{-11\pi}{3}\right)\cdot\tan\left(\frac{35\pi}{6}\right)\cdot\sec\left(\frac{-7\pi}{3}\right)}{\cos\left(\frac{5\pi}{4}\right)\cdot\operatorname{cosec}\left(\frac{7\pi}{4}\right)\cdot\cos\left(\frac{17\pi}{6}\right)}$

$= \frac{-\sin\left(\frac{11\pi}{3}\right)\cdot\tan\left(\frac{35\pi}{6}\right)\cdot\sec\left(\frac{7\pi}{3}\right)}{\cos\left(\frac{5\pi}{4}\right)\cdot\operatorname{cosec}\left(\frac{7\pi}{4}\right)\cdot\cos\left(\frac{17\pi}{6}\right)}$

$= \frac{-\sin\left(4\pi - \frac{\pi}{3}\right)\cdot\tan\left(6\pi - \frac{\pi}{6}\right)\cdot\sec\left(2\pi + \frac{\pi}{3}\right)}{\cos\left(\pi + \frac{\pi}{4}\right)\cdot\operatorname{cosec}\left(2\pi - \frac{\pi}{4}\right)\cdot\cos\left(2\pi + \frac{5\pi}{6}\right)}$

$= \frac{\left(\sin\frac{\pi}{3}\right)\left(-\tan\frac{\pi}{6}\right)\cdot\left(\sec\frac{\pi}{3}\right)}{\left(-\cos\frac{\pi}{4}\right)\cdot\left(-\operatorname{cosec}\frac{\pi}{4}\right)\cdot\left(\cos\frac{5\pi}{6}\right)}$

$$= \frac{\left(\frac{\sqrt{3}}{2}\right)\left(-\frac{1}{\sqrt{3}}\right)(2)}{\left(-\frac{1}{\sqrt{2}}\right)(-\sqrt{2})\left(-\frac{\sqrt{3}}{2}\right)} = \frac{2}{\sqrt{3}}$$

Ans: A

9. $a\cos\theta - b\sin\theta = c \longrightarrow (1)$

$a\sin\theta + b\cos\theta = x \longrightarrow (2)$

$(1)^2 + (2)^2 \Rightarrow a^2 + b^2 = c^2 + x^2$

$\Rightarrow x^2 = a^2 + b^2 - c^2$

$\Rightarrow x = \pm\sqrt{a^2 + b^2 - c^2}$

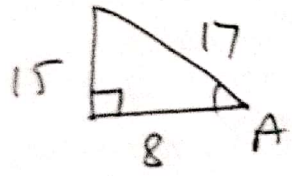
Ans. D

10 $\tan A = -\frac{15}{8}$

$\Rightarrow A \in Q_2$ or Q_4

Given $A \notin Q_4$

$\therefore A \in Q_2$

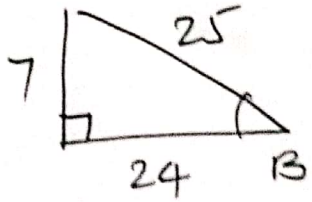


$\sin\alpha \sin B = \frac{-7}{25}$

$\therefore B \in Q_3$ or Q_4

Given $B \notin Q_3$

$\therefore B \in Q_4$



$\sin A\cos B + \cos A \cdot \sin B$

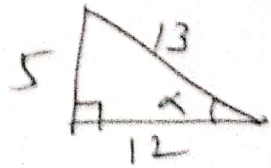
$= \frac{15}{17}\cdot\frac{24}{25} + \left(\frac{-8}{17}\right)\left(\frac{7}{25}\right) = \frac{-304}{425}$

Ans: C

11 $\frac{\sec\alpha + \tan\alpha}{\operatorname{cosec}\alpha - \cot\alpha}$

$= \frac{\left(\frac{-13}{12}\right) + \left(\frac{-5}{12}\right)}{\left(\frac{13}{12}\right) - \left(\frac{-12}{5}\right)} = -0.3$

$\sin\alpha = \frac{5}{13}$



$\alpha \in Q_2$

Ans. C

01. $G = \frac{200C}{\pi}$, $D = \frac{180C}{\pi}$

$G - D = \frac{200C}{\pi} - \frac{180C}{\pi} = \frac{20C}{\pi}$ Ans: A

02 $\cos\theta = \sin(90^\circ - \theta) = \sin(90^\circ + \theta)$ Ans: A, D

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

A) LHS $= \frac{\sin\theta}{1-\cos\theta} \times \frac{1+\cos\theta}{1+\cos\theta} = \frac{\sin\theta(1+\cos\theta)}{1-\cos^2\theta}$

$= \frac{\sin\theta(1+\cos\theta)}{\sin^2\theta} = \frac{1+\cos\theta}{\sin\theta} = RHS$

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

$\Rightarrow \cos^2\theta = 1 - \sin^2\theta = \cos^2\theta$ (True) Ans: A, B

04 Statement I: Conceptual (True)

Statement II: $l = r\theta$

$\Rightarrow r = \frac{l}{\theta} = \frac{15}{\pi} \times 6$ $\theta = 30^\circ = \frac{\pi}{6}$

$= \frac{90}{22} \times 7$

$= \frac{45}{11} \times 7 = \frac{315}{11}$

$= 28\frac{7}{11}$ cm (True)

Ans: A

05 Statement I: Conceptual (True)

Statement II: $\frac{D}{90^\circ} = \frac{2C}{\pi}$

$\Rightarrow \frac{45^\circ}{90^\circ} = \frac{2C}{\pi}$

$\Rightarrow C = \frac{\pi}{4} = \frac{22}{7\times 4} = \frac{11}{14}$ (false)

Ans: C

06 Statement I: $A+B = 90^\circ$

Now, $LHS = \cot A \cdot \cot B$

$= \cot A \cdot \cot(90^\circ - A)$

$= \cot A \cdot \tan A = 1$

Also, $A+B = 90^\circ$

$\Rightarrow \cot(A+B) = \cot 90^\circ$

$\Rightarrow \frac{\cot A \cot B - 1}{\cot A + \cot B} = 0 \Rightarrow \cot A \cdot \cot B = 1$

(False)

Statement II:

$LHS = \left[\left(\cot\frac{\pi}{20}\right)\cot\frac{9\pi}{20}\right]\left[\cot\frac{5\pi}{20}\cdot\cot\frac{9\pi}{20}\right]$

$= \cot\frac{\pi}{20}\cdot\cot\left(\frac{\pi}{2}-\frac{\pi}{20}\right)\cdot\cot\frac{\pi}{4}\cdot\cot\frac{9\pi}{20}$

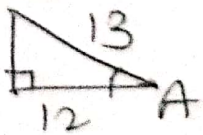
$= \left(\cot\frac{\pi}{2}\cdot\tan\frac{\pi}{20}\right)\cdot\cot\frac{\pi}{4}\cdot\cot\frac{9\pi}{20}$

$= 1\times 1\times\cot\frac{9\pi}{20} \neq 1$ (false)

Ans: B

07 Assertion: $\tan\theta = \frac{5}{12}$

$\therefore \sec\theta = \frac{13}{12}$ (True)



Reason: Conceptual (True)

Ans: A

08 Assertion: $\tan 225^\circ = \tan(180^\circ + 45^\circ)$

$= \tan 45^\circ = 1$ (True)

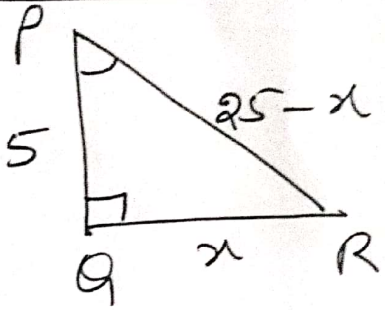
Reason: Conceptual (False)

Ans: E

09 $5^2 + x^2 = (25-x)^2$

$x = 12$ satisfies above eqn

$\therefore QR = 12$ cm



Ans. B

10 $\sin P = \frac{5}{13}$

Ans. E

Ans. D

11 $\cos R = \frac{12}{13}$

Ans. A

12 $\theta = \frac{7\pi}{6} = \frac{7 \times 180^\circ}{6} = 210^\circ$

13 $\cos 210^\circ = \cos(180^\circ + 30^\circ) = -\cos 30^\circ = -\frac{\sqrt{3}}{2}$, Negative

Ans: B

14 Short cut method.

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

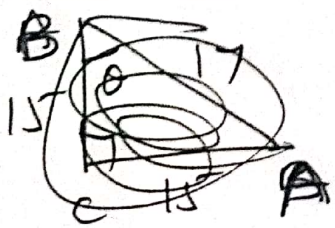
$\tan 60^\circ + \tan 60^\circ + \tan 60^\circ - \tan 60^\circ \cdot \tan 60^\circ \cdot \tan 60^\circ$

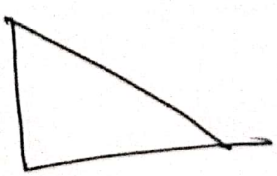
$= \sqrt{3} + \sqrt{3} + \sqrt{3} - \sqrt{3} \cdot \sqrt{3} \cdot \sqrt{3}$

$= 3\sqrt{3} - 3\sqrt{3} = 0$

Ans. 0

15





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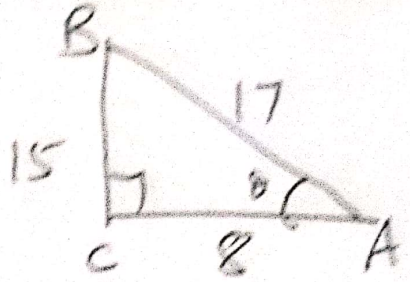


$\cos\theta = \frac{8}{17}$ (1)

$100 \cdot \cos\theta = \frac{800}{17} = 47.05$

(Integral value)

Ans: 47

16

a) ~~put A = 0°~~

$\tan A \left[-\cot A\right]\left[-\sin A\right] \left[-\cos A\right]\left[-\tan A\right](\cos A) = \frac{1}{\cos A}$ (2)

b) $\frac{(-\sin A)(-\cos A)}{\sin A} = \cos A$ (t)

c) $\sin^2 A + \cos^2 A = 1$ (9)

d) $\frac{\left[-\sin 660^\circ\right]\left[\sec 420^\circ\right]}{\left[\cot 225^\circ\right]\left[\operatorname{cosec} 315^\circ\right]} =$

$= \frac{\left[-\sin(360^\circ + 300)\right]\left[\sec(360^\circ + 60^\circ)\right]}{\left[\cot(180^\circ + 45^\circ)\right]\left[\operatorname{cosec}(360^\circ - 45^\circ)\right]}$

$= \frac{(-\sin 300^\circ)(\sec 60^\circ)}{(\cot 45^\circ)(-\operatorname{cosec} 45^\circ)}$

$= \frac{-\sin(360^\circ - 60^\circ) \cdot \sec 60^\circ}{(\cot 45^\circ)(-\operatorname{cosec} 45^\circ)} = \frac{\left(\frac{\sqrt{3}}{2}\right)(2)}{(1)(-\sqrt{2})} = -\sqrt{\frac{3}{2}}$ (r)

Ans: s, t, 2, r

17 a) $\sin 150^\circ = \sin(180^\circ - 30^\circ) = \sin 30^\circ$ (P) (2)

b) $\cos 210^\circ = \cos(180^\circ + 30^\circ) = -\cos 30^\circ$ (Q)

c) $\tan 225^\circ = \tan(180^\circ + 45^\circ) = \tan 45^\circ$ (R)

d) $\sin 330^\circ = \sin(360^\circ - 30^\circ) = -\sin 30^\circ$ (S)

Ans.. P, Q, R, S

LEARNERS TASK (CUQ's)

01. $135^\circ = 135 \times 1^\circ = 135 \times \frac{\pi}{180} = \frac{3\pi}{4}$ Ans: C

Ans: B

02 100

03 $\cos 7A = \sin(A - 6^\circ)$

$\Rightarrow 7A + A - 6^\circ = 90^\circ$

$\Rightarrow A = 12^\circ$ Ans A

Ans: B

04 $-\cot\theta$

05 $\sec^2\theta - \tan^2\theta = 1$

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

$\Rightarrow \sec\theta + \tan\theta = \frac{1}{\sec\theta - \tan\theta}$ Ans: B

Ans D

06 -1

07 $\operatorname{cosec}\theta - \cot\theta = \frac{1}{k} \Rightarrow \cot\theta - \operatorname{cosec}\theta = \frac{-1}{k}$ Ans B

Ans: C

08 $\pm\sqrt{1 + \cot^2\theta}$

09

09 $\sin\theta\left(\frac{\cos\theta}{\sin\theta}\right)+\cos\theta\left(\frac{\sin\theta}{\cos\theta}\right)=\cos\theta+\sin\theta$ Ans. A

10 $\left(\frac{1}{2}\right)\left(\frac{1}{2}\right)+\left(\frac{\sqrt{3}}{2}\right)\left(\frac{\sqrt{3}}{2}\right)=\frac{1}{4}+\frac{3}{4}=1$ Ans. B

JEE MAINS LEVEL

01 $\frac{(1+\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(1-\cos\theta)}=\frac{1-\sin^2\theta}{1-\cos^2\theta}=\frac{\cos^2\theta}{\sin^2\theta}=\cot^2\theta=\frac{49}{64}$

Ans: A

02 $\operatorname{cosec}^2A-\cot^2A=1$

$10-\cot^2A=1$

$\Rightarrow \cot^2A=9$

$\Rightarrow \cot A=3$

Ans. D

03 $\sec\theta-\tan\theta=3 \longrightarrow (1)$

$\sec\theta+\tan\theta=\frac{1}{3} \longrightarrow (2)$

$(1)+(2) \Rightarrow 2\sec\theta=\frac{10}{3} \Rightarrow \sec\theta=\frac{5}{3}$

$(1)-(2) \Rightarrow -2\tan\theta=\frac{8}{3} \Rightarrow \tan\theta=\frac{-4}{3}$

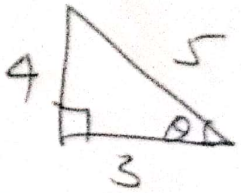
$\sec\theta$ is positive and $\tan\theta$ is negative

$\therefore \theta \in Q_4$

Ans. D

04 $\tan\theta=-\frac{4}{3} \Rightarrow \theta \in Q_2$ or Q_4 But $\theta \notin Q_4$

$\therefore \boxed{\theta \in Q_2}$



$5\sin\theta+10\cos\theta+9\sec\theta$

$5\left(\frac{4}{5}\right)+10\left(\frac{-3}{5}\right)+9\left(\frac{-5}{3}\right)=4-6-15$

$=-17$

Ans: C

05 $\sec\left(\frac{13}{3}\times 180^\circ\right) = \sec 780^\circ = \sec(2\times 360^\circ + 60^\circ)$ (10)

$= \sec 60^\circ = 2$ Ans: A

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06 $\left(\cot\frac{\pi}{16}\cdot\cot\frac{7\pi}{16}\right)\left(\cot\frac{2\pi}{16}\cdot\cot\frac{6\pi}{16}\right)\left(\cot\frac{3\pi}{16}\cdot\cot\frac{5\pi}{16}\right)\cdot\cot\frac{4\pi}{16}$

$= 1\times 1\times 1\times 1$ Since $A+B=90^\circ$

$= 1$ $\Rightarrow \cot A\cdot\cot B = 1$ Ans: A

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07 $\dfrac{(-\cos A)(-\tan A)(\cos A)}{(\tan A)(-\cot A)(-\sin A)} = -\cos A$ Ans: A

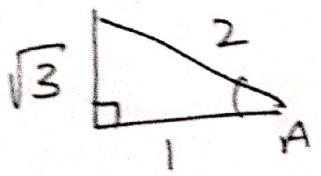
08

$\cos A = -\frac{1}{2}$

$A \in Q_2$ or Q_3

Given $A \notin Q_2$

$\therefore \boxed{A \in Q_3}$

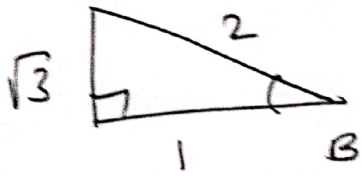


$\cos B = -\frac{1}{2}$

$B \in Q_2$ or Q_3

Given $B \notin Q_3$

$\therefore \boxed{B \in Q_2}$



$$\frac{4\sin B - 3\tan A}{\tan B + \sin A} = \frac{4\left(\frac{\sqrt{3}}{2}\right) - 3\left(\sqrt{3}\right)}{\left(-\frac{\sqrt{3}}{1}\right) + \left(-\frac{\sqrt{3}}{2}\right)} = \frac{-2\sqrt{3}}{-\frac{3\sqrt{3}}{2}} = \frac{4}{3}$$

Ans: B

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09 $3\sin\theta + 4\cos\theta = 5$

$4\sin\theta - 3\cos\theta = x$

$\Rightarrow 3^2 + 4^2 = 5^2 + x^2$

$= 25 = 25 + x^2$

$x = 0$

Ans: C

10 $(m^2-n^2)\sin^2 B$ (11)

$= \left(\frac{\sin^2 A}{\sin^2 B} - \frac{\cos^2 A}{\cos^2 B}\right)\sin^2 B$

$= \frac{(\sin^2 A \cos^2 B - \cos^2 A \sin^2 B)}{\sin^2 B \cdot \cos^2 B} \cdot \sin^2 B$

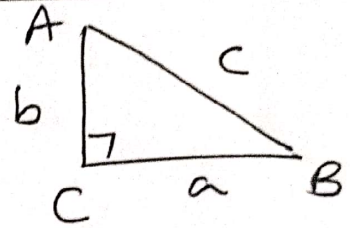
$= \frac{(1-\cos^2 A)\cos^2 B - \cos^2 A(1-\cos^2 B)}{\cos^2 B}$

$= \frac{\cos^2 B - \cos^2 A}{\cos^2 B} = 1-n^2$ Ans: A

11 $\tan A + \tan B$

$= \frac{a}{b} + \frac{b}{a}$

$= \frac{a^2+b^2}{ab} = \frac{c^2}{ab}$



Ans: B

12 1 minute → 360 revolutions

60 Secons → 360 revolut

1 sec → 6 revolutions

Now, 1 revolution → 2π radians

6 revolutions → 12π radians

Ans. D

13 $\frac{2\sin\theta}{1+\cos\theta+\sin\theta} = x$

let $\theta = 90^\circ$

$\Rightarrow \frac{2(1)}{1+0+1} = x$

$x = 1$

opt A: $\frac{1-\cos\theta+\sin\theta}{1+\sin\theta} = \frac{1-0+1}{1+1} = 1 = x$

Ans. A

14 Let $\alpha = 60^\circ$ (2)

$$\left(\frac{1}{2}\right)^4 + 2\left(\frac{1}{2}\right)^2\left((2)^2 - 1\right) = \frac{25}{16}$$

option A: $1 + \sin^4\alpha$

$= 1 + \left(\frac{\sqrt{3}}{2}\right)^4 = \frac{25}{16}$ Ans: A

15 $$\frac{\tan 160^\circ - \tan 110^\circ}{1 + \tan 160^\circ \cdot \tan 110^\circ} = \tan(\quad)$$

$$= \frac{\tan(180^\circ - 20^\circ) - \tan(90^\circ + 20^\circ)}{1 + \tan(180^\circ - 20^\circ)\cdot \tan(90^\circ + 20^\circ)}$$

$$= \frac{-\tan 20^\circ + \cot 20^\circ}{1 + \tan 20^\circ \cdot \cot 20^\circ} = \frac{-n + \frac{1}{n}}{1 + 1} = \frac{1 - n^2}{2n}$$

Ans: C

16 Let $\theta = 45^\circ$

$\therefore m = 1 + \frac{1}{\sqrt{2}}$, $n = 1 - \frac{1}{\sqrt{2}}$

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

opt: c: $4\sqrt{mn}$

$= 4\sqrt{\left(1 + \frac{1}{\sqrt{2}}\right)\left(1 - \frac{1}{\sqrt{2}}\right)} = 2\sqrt{2}$ Ans: C

JEE ADVANCED LEVEL

01. Conceptual Ans: A, B, C, D

02 A) $\sin 60^\circ$, $\sin 120^\circ = \sin(180^\circ - 60^\circ) = \sin 60^\circ$ ✓

B) $\cos 60^\circ$, $\cos 300^\circ = \cos(360^\circ - 60^\circ) = \cos 60^\circ$ ✓

c) $\tan 45^\circ$, $\tan 225^\circ = \tan(180^\circ + 45^\circ) = \tan 45^\circ$ ✓

d) $\cot 30^\circ$, $\cot 150^\circ = \cot(180^\circ - 30^\circ) = -\cot 30^\circ$ ✓ (1)

Ans: A, B, C, D

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03 A) $\sin\theta = \sin 150^\circ = \sin(180^\circ - 30^\circ) = \sin 30^\circ$ ✓

B) $\cos\theta = \cos 150^\circ = \cos(180^\circ - 30^\circ) = -\cos 30^\circ$ ✓

C) $\tan\theta = \tan 150^\circ = \tan(180^\circ - 30^\circ) = -\tan 30^\circ$ ✓

D) $\cot\theta = \cot 150^\circ = \cot(180^\circ - 30^\circ) = -\cot 30^\circ$ ✗

$= \frac{-1}{\tan 30^\circ}$

Ans: A, B, C

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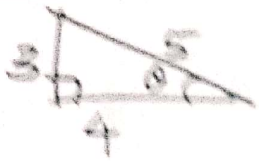
04 Statement I: $\cos\theta = \frac{4}{5}$

$\Rightarrow \tan\theta = \frac{3}{4}$ (True)



Statement II: Conceptual (True)

Ans: A

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05 Statement I: $\cos 150^\circ = \cos(180^\circ - 30^\circ) = -\cos 30^\circ$ (True)

Ans: A

Statement II: Conceptual (True)

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06 Assertion: $\sec 120^\circ = \sec(180^\circ - 60^\circ) = -\sec 60^\circ = -2$

(True)

Reason: conceptual (True)

Ans: A

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07 Assertion: Conceptual (True)

Reason: Conceptual (True)

Ans: A

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08 $\cos(3\pi + \theta) = \cos(2\pi + (\pi + \theta)) = \cos(\pi + \theta) = -\cos\theta$

Ans: B

09 $\tan(11\pi-\theta) = \tan(10\pi + (\pi-\theta))$ (14)

$= \tan(\pi-\theta) = -\tan\theta$ Ans: C

10 $\cos(4\pi+\theta)\cdot\tan(4\pi-\theta)$

$= \cos\theta\cdot(-\tan\theta) = -\sin\theta$ Ans: A

11 $\sin 150^\circ = \sin(180^\circ - 30^\circ) = \sin 30^\circ = \frac{1}{2}$ (positive)

Ans: A

12 $\tan 150^\circ = \tan(180^\circ - 30^\circ) = -\tan 30^\circ = -\frac{1}{\sqrt{3}}$ (Negative)

Ans: B

13 $\sec\theta(1-\sin\theta)(\sec\theta+\tan\theta)$

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

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

$= 1$

Ans: 1

14 $\cot A = \frac{3}{4}$ $\therefore \frac{\sin A + \cos A}{\sin A - \cos A} = \frac{1+\cot A}{1-\cot A} = \frac{1+3/4}{1-3/4}$

$= 7$ Ans. 7

15 a) $\sin\theta = \sqrt{1-\cos^2\theta} = \sqrt{1-\frac{1}{\sec^2\theta}} = \frac{\sqrt{\sec^2\theta - 1}}{\sec\theta}$ (t)

b) $\cos\theta = \frac{1}{\sec\theta}$ (s)

c) $\tan\theta = \sqrt{\sec^2\theta - 1}$ (p)

d) $\operatorname{cosec}\theta = \frac{1}{\sin\theta} = \frac{\sec\theta}{\sqrt{\sec^2\theta - 1}}$ (γ)

Ans: t, s, p, γ

16 a) 2 (P, Q) | c) $\frac{2}{\sqrt{3}}$ (r, s)

b) $\frac{2}{\sqrt{3}}$ (P, Q) | d) $\frac{2}{\sqrt{3}}$ (r, s)

Ans: (P, Q), (P, Q), (r, s), (r, s)

ADDITIONAL PRACTICE QUESTIONS

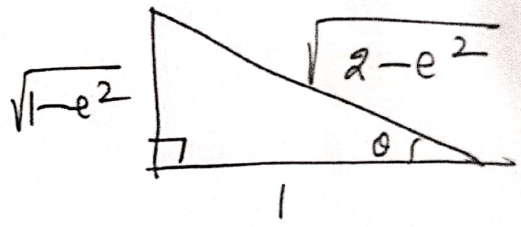
01. $\sec A + \tan A = 3$ → (1)

$\sec A - \tan A = \frac{1}{3}$ → (2)

(1) + (2) ⇒ $2\sec A = \frac{10}{3} \Rightarrow \sec A = \frac{5}{3}$ Ans B

02 $\tan\theta = \sqrt{1-e^2}$

$\Rightarrow \tan\theta = \frac{\sqrt{1-e^2}}{1}$



Now, $\sec\theta + \tan^3\theta \cdot \operatorname{cosec}\theta$

$= \sqrt{2-e^2} + \left(\sqrt{1-e^2}\right)^3 \cdot \frac{\sqrt{2-e^2}}{\sqrt{1-e^2}} = (2-e^2)^{3/2}$

Ans: —

03 $\tan\theta = -\frac{4}{3} \Rightarrow \theta \in Q_2$ or Q_4

$\theta \in Q_2 \Rightarrow \sin\theta = \frac{4}{5}$

$\theta \in Q_4 \Rightarrow \sin\theta = -\frac{4}{5}$

Ans: B

04 $4\left[\left(\frac{1}{2}\right)^4 + \left(\frac{1}{2}\right)^4\right] - 3\left[\left(\frac{1}{\sqrt{2}}\right)^2 - (1)^2\right] = 2$ Ans: 2

⇒ THE END ∈