

5. TRIGONOMETRY ①

Class: IX, Mathematics FOUNDATION⁺ SOLUTIONS

TEACHING TASK 2025/26 JEE MAINS

01. $\tan A + \cot A = 2$
Clearly $A = 45^\circ$ satisfies the above eqn. Ans: B
 $\therefore \tan^3 45^\circ + \cot^3 45^\circ = (1)^3 + (1)^3 = 1 + 1 = 2$
02. 400 gradient Ans: C
03. c) $\sin(180^\circ - \theta) = \sin \theta$ Ans: C
04. $-\cos \theta$ Ans: B
05. $\cos \theta$ Ans: A
06. $\sec 150^\circ = \sec(180^\circ - 30^\circ)$ Ans: D
 $= -\sec 30^\circ = -\frac{2}{\sqrt{3}}$
07. $\sin 300^\circ = \sin(360^\circ - 60^\circ) = -\sin 60^\circ = -\frac{\sqrt{3}}{2}$ Ans: D
08. $\sin 90^\circ + \cos 180^\circ + \tan 270^\circ$ Ans: C
 $= 1 + (-1) + (\text{not defined}) = \text{not defined}$
09. $\tan A = 1 \Rightarrow A = \frac{\pi}{4} \therefore \sin \frac{\pi}{4} = \frac{1}{\sqrt{2}} = x$ Ans: A
10. $\sin(30^\circ + 60^\circ) = \sin 90^\circ = 1$ Ans: A

2

01. $\theta = 210^\circ \in Q_3$

A) $\sin \theta < 0$, B) $\cos \theta < 0$ C) $\tan \theta > 0$

Ans: A, B, C

02.	Conceptual
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Ans: A, B, C

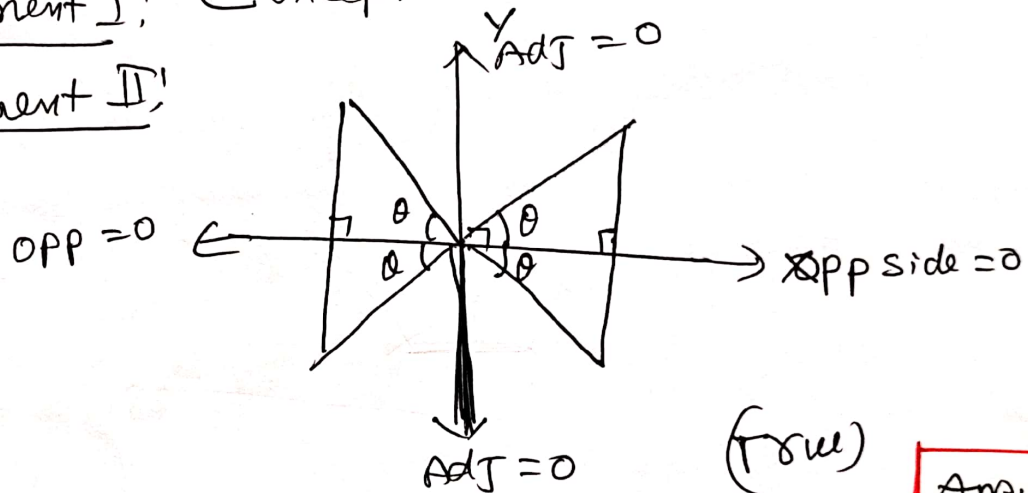
03 Statement I: Conceptual (True)

Statement D: Conceptual (True)

Ans. A

04. Statement I: Conceptual (True)

Statement II:



(Four)

Ans. A

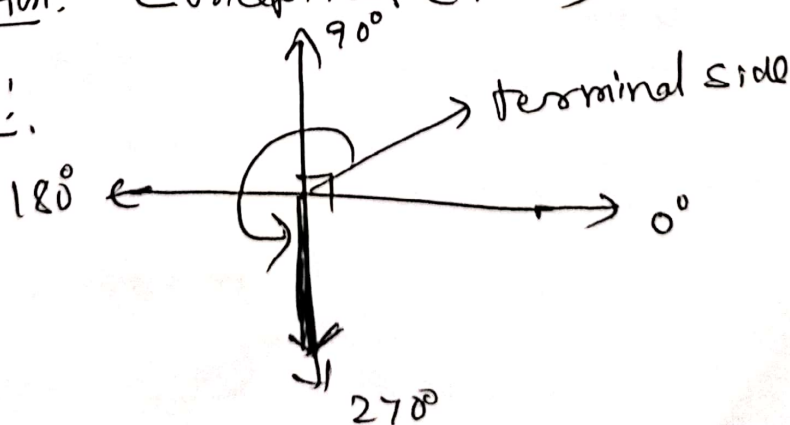
05	<u>Assertion:</u> Conceptual (True)
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Reason: Conceptual (False)

Ans: C

06. Assertion! Conceptual (True)

Reason:



Along Negative Y-axis (False)
Ans: C

Ans: C

07 $\cos 150^\circ = \cos(180^\circ - 30^\circ) = -\cos 30^\circ$ Ans: A (3)

08 $\sin(180^\circ - 150^\circ) = \sin 150^\circ$ Ans: C

09 Conceptual Ans: C

10 $l = 11 \text{ cm}$
 $r = 7 \text{ cm}$



$l = r\theta$
 $\Rightarrow \theta = \frac{l}{r} = \frac{11}{7} \text{ radians}$

Ans: C

11 $\sin \theta = \frac{3}{5} \Rightarrow \cos \theta = \frac{4}{5}$
 $100 \cdot \cos^2 \theta = 100 \times \frac{16}{25} = 64$

Ans: 64

12 $\sin \theta = \frac{\sqrt{3}}{2} \Rightarrow \theta = 60^\circ$
 Also, $\sin(180^\circ - 60^\circ) = \sin 60^\circ = \frac{\sqrt{3}}{2}$
 $\therefore \theta = 120^\circ$
 $\therefore \text{For } \theta = 60^\circ, 120^\circ, \sin \theta = \frac{\sqrt{3}}{2}$

Ans: 2

- 13 a) $-\sin \theta (P)$
 b) $\cos \theta (Q)$
 c) $\tan \theta (R)$
 d) $\cot \theta (S)$

Ans: P, Q, R, S

- 14 a) $\pi (P)$
 b) $\sim 57.3 \text{ degrees } (Q)$
 c) $\frac{\pi}{2} \text{ radians } (R)$
 d) $2\pi \text{ radians } (S)$

Ans: P, Q, R, S

LEARNERS TASK (CUES)

④

01.	Conceptual	Ans: B
02.	Conceptual	Ans: B
03.	Conceptual	Ans: B
04.	Conceptual	Ans: B
05.	Conceptual	Ans: B
06.	Conceptual	Ans: B
07.	Conceptual	Ans: B
08.	Conceptual	Ans: C
09.	Conceptual	Ans: C
10.	Conceptual	Ans: C

JEE MAINS LEVEL

01.	$\sin 60^\circ + \cos 60^\circ = \sin \theta + \cos \theta = 1$	Ans: A
02.	$\cot(180^\circ - \theta) = -\cot \theta$	Ans: B
03.	$\cot \theta = \frac{1}{\cos \theta}$ (wrong)	Ans: D
04.	1 radian = $57^\circ 3'$ (approx)	Ans: B
05.	$120^\circ = 120 \times \frac{\pi}{180} = \frac{2\pi}{3}$	Ans: A
06.	$-\sin \theta$	Ans: B
07.	$\sin(90^\circ - x) + \cos x = \cos x + \cos x = 2\cos x$	Ans: B
08.	$2\cos x$	Ans: B, D

Repeated.



09. $\cot \theta = 0 \Rightarrow \theta = 90^\circ$ (5) Ans: B

10. $\sec^2 x - \tan^2 x = 1$
 $\Rightarrow b^2 - a^2 = 1$ Ans: B

JEE ADVANCED LEVEL

01. A) $\sin(360^\circ - \theta) = -\sin \theta$ (True)
 B) $\sin(180^\circ + \theta) = -\sin \theta$ (True)
 D) $\sin(-\theta) = -\sin \theta$ Ans: A, B, D

02. $\cot A = 1 \Rightarrow A = 45^\circ$
 Conceptual Ans: A, B, C, D

03. Statement I: Conceptual (True)
 Statement II: Conceptual (True) Ans: A

04. Statement I: Conceptual (True)
 Statement II: Conceptual (False) Ans: C

05. Assertion: Conceptual (True)
 Reason: Conceptual (True) Ans: A

06. Assertion: Conceptual (True)
 Reason: Conceptual (True) Ans: A

07. $\frac{\pi}{2}$ Ans: A

08. Conceptual Ans: D

09. Conceptual Ans: C

10. Conceptual Ans: B

11. $225^\circ = 225 \times \frac{\pi}{180}$
 $= 225 \times \frac{\pi}{180} = \frac{5\pi}{4} \times 100$

$= 125\pi = 125 \times 3.14$
 $= 392.5 \sim 393$

Ans: 393

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

Ans: 1

13. a) Conceptual (p)

b) Conceptual (q)

c) Conceptual (r)

d) Conceptual (s)

Ans: p, q, r, s

14. a) Conceptual (p)

b) Conceptual (q)

c) Conceptual (r)

d) Conceptual (s)

Ans: p, q, r, s

$\Rightarrow$ THE END $\Leftarrow$