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Grade 11

Mathematics NCERT Solutions

Chapter 3: Trigonometric Functions



By Khushboo

EXERCISE 3.1

1 (i) $5\pi/36$

(ii) $-19\pi/72$

(iii) $4\pi/3$

(iv) $26\pi/9$

2 (i) $123^\circ 45'$

(ii) $-229^\circ 5'$ (approx)

(iii) 300°

(iv) 210°

3 12π

4 12.6°

5 $20\pi/3$ cm

6 $5 : 4$

7 (i) $2/15$ radian

(ii) $1/5$ radian

(iii) $7/25$ radian

EXERCISE 3.2

1 $\sin x = -\sqrt{3}/2$

$\tan x = \sqrt{3}$

$\operatorname{cosec} x = -2\sqrt{3}/3$

$\sec x = -2$

$\cot x = 1/\sqrt{3}$

2 $\cos x = -4/5$

$\tan x = -3/4$

$\operatorname{cosec} x = 5/3$

$\sec x = -5/4$

$\cot x = -4/3$

EXERCISE 3.2

3 $\sin x = -3/5$
 $\cos x = -4/5$
 $\tan x = 3/4$
 $\operatorname{cosec} x = -5/3$
 $\sec x = -5/4$

4 $\cos x = 5/13$
 $\sin x = -12/13$
 $\tan x = -12/5$
 $\operatorname{cosec} x = -13/12$
 $\cot x = -5/12$

5 $\sin x = 5/13$
 $\cos x = -12/13$
 $\operatorname{cosec} x = 13/5$
 $\sec x = -13/12$
 $\cot x = -12/5$

6 $\sqrt{3}/2$

7 -2

8 $-\sqrt{3}$

9 $\sqrt{3}/2$

10 -1

EXERCISE 3.3

1 1

2 2

3 6

4 10

5 (i) $(\sqrt{6} + \sqrt{2})/4$
(ii) $2 - \sqrt{3}$

6 $\sin(x + y)$

7 $(1 + \tan x)/(1 - \tan x)$

8 $\cot x$

9 1

10 $\cos x$

11 $-2 \sin x$

12 $\sin 2x \sin 10x$

13 $\sin 4x \sin 8x$

14 $4 \cos^2 x \sin 4x$

15 $\cot x (\sin 5x - \sin 3x)$

16 $-2 \tan x$

17 $\tan x/4$

18 $\tan [(x - y)/2]$

19 $\tan (3x/2)$

20 $\sin x$

21 $\cot (3x/2)$

22 1

23 $\tan 4x$

24 $1 - 8 \sin^2 x \cos^2 x$

25 $32 \cos^6 x - 48 \cos^4 x + 18 \cos^2 x - 1$

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