EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Trigonometrical Identities

Grade : ICSE Grade X

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1. Given $\tan P = \frac{4}{3}$, find $\sec P$

(i) $\frac{5}{4}$ (ii) $\frac{3}{5}$ (iii) $\frac{4}{5}$ (iv) $\frac{3}{4}$ (v) $\frac{5}{3}$

2. $\cot L =$

(i) $\frac{1}{\cos L}$ (ii) $\frac{1}{\sec L}$ (iii) $\frac{1}{\sin L}$ (iv) $\frac{1}{\operatorname{cosec} L}$ (v) $\frac{1}{\tan L}$

3. In $\triangle HIJ$, right angled at I, if $HI = 15$ cm and $IJ = 8$ cm, find $\tan J$

(i) $\frac{17}{8}$ (ii) $\frac{15}{8}$ (iii) $\frac{3}{2}$ (iv) $\frac{5}{2}$ (v) $\frac{13}{8}$

4. $\operatorname{cosec} L =$

(i) $\frac{1}{\cot L}$ (ii) $\frac{1}{\tan L}$ (iii) $\frac{1}{\cos L}$ (iv) $\frac{1}{\sec L}$ (v) $\frac{1}{\sin L}$

5. $\cos(A - B) =$

(i) $\sin A \cos B + \cos A \sin B$ (ii) $\sin A \cos B - \cos A \sin B$ (iii) $\cos A \cos B - \sin A \sin B$

(iv) $\cos A \cos B + \sin A \sin B$

6. If $\sin(B + C) = \frac{1}{2}\sqrt{3}$ and $\sin(B - C) = \frac{1}{2}$, find B & C

(i) B=43°,C=13° (ii) B=47°,C=17° (iii) B=44°,C=14° (iv) B=46°,C=16° (v) B=45°,C=15°

7. Find the value of $(1 + \tan\theta + \sec\theta)(1 + \cot\theta - \operatorname{cosec}\theta)$

(i) 2 (ii) 3 (iii) 1 (iv) (-1) (v) 4

8. The value of $\cos 261°$ in terms of an angle between $0°$ and $90°$ is

(i) $\cos 81°$ (ii) $-\sin 81°$ (iii) $\sin 81°$ (iv) $-\cos 81°$

9. Given that $13\sin\theta = 5$, find $\sec\theta$

(i) $\frac{5}{12}$ (ii) $\frac{13}{5}$ (iii) $\frac{13}{12}$ (iv) $\frac{12}{13}$ (v) $\frac{12}{5}$

10. Express $\operatorname{cosec} 68°$ in terms of $\cot 68°$

(i) $\dfrac{1}{\sqrt{1+\cot^2 68°}}$ (ii) $\dfrac{\cot 68°}{\sqrt{1+\cot^2 68°}}$ (iii) $\sqrt{1+\cot^2 68°}$ (iv) $\dfrac{\sqrt{1+\cot^2 68°}}{\cot 68°}$ (v) $\dfrac{1}{\cot 68°}$

11. $\sec 38° - \operatorname{cosec} 52° =$

(i) -1 (ii) $2\sin 38°$ (iii) $2\sin 52°$ (iv) 0 (v) 1

12. The value of $\cos 312°$ in terms of an angle between $0°$ and $90°$ is

(i) $-\cos 42°$ (ii) $\sin 42°$ (iii) $-\sin 42°$ (iv) $\cos 42°$

13. Given $\sin E = \dfrac{3}{5}$, find $\operatorname{cosec} E$

(i) $\dfrac{4}{5}$ (ii) $\dfrac{5}{3}$ (iii) $\dfrac{4}{3}$ (iv) $\dfrac{3}{4}$ (v) $\dfrac{5}{4}$

14. $\cot 72° - \tan 18° =$

(i) 1 (ii) 0 (iii) -1 (iv) $2\sin 72°$ (v) $2\sin 18°$

15. Find angle θ such that $\cos\theta = 0.4155$

From Table of Natural Cosines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
65	0.4226	0.4210	0.4195	0.4179	0.4163	0.4147	0.4131	0.4115	0.4099	0.4083	3	5	8	11	13

(i) 65° 17' (ii) 65° 32' (iii) 65° 27' (iv) 65° 37' (v) 65° 22'

16. $\dfrac{\sec 78°}{\operatorname{cosec} 12°} =$

(i) $\tan 78°$ (ii) -1 (iii) $\tan 12°$ (iv) 0 (v) 1

17. Which of the following are true?

a)
$$(\sec\theta - \tan\theta)^2 = \frac{1 - \sin\theta}{1 + \sin\theta}$$

b)
$$(\sec\theta - \tan\theta)^2 = \frac{1 + \sin\theta}{1 - \sin\theta}$$

c)
$$\frac{1 + \sin\theta}{\cos\theta} + \frac{\cos\theta}{1 + \sin\theta} = 2\sec\theta$$

d)
$$\frac{\cos\theta}{1 - \sin\theta} + \frac{\cos\theta}{1 + \sin\theta} = 2$$

e)
$$\frac{\cos\theta}{\operatorname{cosec}\theta + 1} + \frac{\cos\theta}{\operatorname{cosec}\theta - 1} = 2\tan\theta$$

(i) {b,a} (ii) {a,c,e} (iii) {b,a,c} (iv) {d,c} (v) {b,d,e}

18. Given $\sec J = \frac{2}{3}\sqrt{3}$, find $\cos J$

(i) $\frac{1}{3}\sqrt{3}$ (ii) $\frac{1}{2}\sqrt{3}$ (iii) 2 (iv) $\frac{1}{2}$ (v) $\sqrt{3}$

19. Which of the following are true?

a) $\operatorname{cosec}(180 - \theta) = \sec\theta$
b) $\operatorname{cosec}(180 - \theta) = \operatorname{cosec}\theta$
c) $\cot(180 - \theta) = -\cot\theta$
d) $\sec(180 - \theta) = -\operatorname{cosec}\theta$
e) $\cot(180 - \theta) = -\tan\theta$
f) $\sec(180 - \theta) = -\sec\theta$

(i) {a,b} (ii) {d,b,c} (iii) {b,c,f} (iv) {d,c} (v) {e,a,f}

20. Express $\tan 49°$ in terms of $\sin 49°$

(i) $\frac{1}{\sqrt{1 - \sin^2 49°}}$ (ii) $\frac{\sqrt{1 - \sin^2 49°}}{\sin 49°}$ (iii) $\sqrt{1 - \sin^2 49°}$ (iv) $\frac{\sin 49°}{\sqrt{1 - \sin^2 49°}}$ (v) $\frac{1}{\sin 49°}$

21. $\frac{1 - \tan^2 10°}{1 + \tan^2 10°} =$

(i) $\tan 20°$ (ii) $\sin 20°$ (iii) $\cot 20°$ (iv) $\cos 20°$

22. Find the value of $\cos 15° \, 24'$

From Table of Natural Cosines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
15	0.9659	0.9655	0.9650	0.9646	0.9641	0.9636	0.9632	0.9627	0.9622	0.9617	1	2	2	3	4

(i) 0.9638 (ii) 0.9645 (iii) 0.9641 (iv) 0.9644 (v) 0.9637

23. $\operatorname{cosec} 46° + \sec 73° =$

(i) $\sec 44° + \operatorname{cosec} 17°$ (ii) $\sec 46° + \operatorname{cosec} 73°$ (iii) $\sec 44° + \sec 17°$ (iv) $\operatorname{cosec} 46° + \operatorname{cosec} 73°$

24. Given that $4 \cot \theta = 3$, find $\tan \theta$

(i) $\frac{4}{3}$ (ii) $\frac{5}{4}$ (iii) $\frac{3}{5}$ (iv) $\frac{5}{3}$ (v) $\frac{4}{5}$

25. Express $\sec \theta$ in terms of $\sin \theta$

(i) $\frac{1}{\sqrt{1 - \sin^2 \theta}}$ (ii) $\sqrt{1 - \sin^2 \theta}$ (iii) $\frac{\sin \theta}{\sqrt{1 - \sin^2 \theta}}$ (iv) $\frac{1}{\sin \theta}$ (v) $\frac{\sqrt{1 - \sin^2 \theta}}{\sin \theta}$

Assignment Key

1) (v)	2) (v)	3) (ii)	4) (v)	5) (iv)	6) (v)
7) (i)	8) (iv)	9) (iii)	10) (iii)	11) (iv)	12) (ii)
13) (ii)	14) (ii)	15) (iii)	16) (v)	17) (ii)	18) (ii)
19) (iii)	20) (iv)	21) (iv)	22) (iii)	23) (i)	24) (i)
25) (i)					

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