EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Trigonometrical Identities

Grade : ICSE Grade X

1. Express $\cot\theta$ in terms of $\operatorname{cosec}\theta$

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

2. $\frac{1 + \tan^2\theta}{1 + \cot^2\theta} =$

(i) $\cot^2\theta$ (ii) $\operatorname{cosec}^2\theta$ (iii) 1 (iv) $\sec^2\theta$ (v) $\tan^2\theta$

3. Which of the following are true?

a) $\cos(180 - \theta) = -\cos\theta$
b) $\tan(180 - \theta) = -\tan\theta$
c) $\sin(180 - \theta) = \sin\theta$
d) $\cos(180 - \theta) = -\sin\theta$
e) $\sin(180 - \theta) = \cos\theta$
f) $\tan(180 - \theta) = -\cot\theta$

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

4. Which of the following are true?

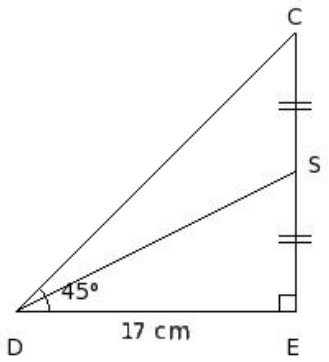
a) $\cot(270 - \theta) = \cot\theta$
b) $\sec(270 - \theta) = -\sec\theta$
c) $\cot(270 - \theta) = \tan\theta$
d) $\sec(270 - \theta) = -\operatorname{cosec}\theta$
e) $\operatorname{cosec}(270 - \theta) = -\sec\theta$
f) $\operatorname{cosec}(270 - \theta) = -\operatorname{cosec}\theta$

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

5. Express $\operatorname{cosec}26°$ in terms of $\cot26°$

(i) $\frac{1}{\sqrt{1 + \cot^2 26°}}$ (ii) $\sqrt{1 + \cot^2 26°}$ (iii) $\frac{1}{\cot26°}$ (iv) $\frac{\cot26°}{\sqrt{1 + \cot^2 26°}}$ (v) $\frac{\sqrt{1 + \cot^2 26°}}{\cot26°}$

6. In the given figure, $\triangle CDE$ is a right angle triangle with $\angle E = 90°$ and DE = 17 cm. S is the mid-point of CE. Find $\angle SDE$ using tables.



(i) $23° 34'$ (ii) $26° 34'$ (iii) $28° 34'$ (iv) $29° 34'$ (v) $24° 34'$

7. $\sec M =$

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

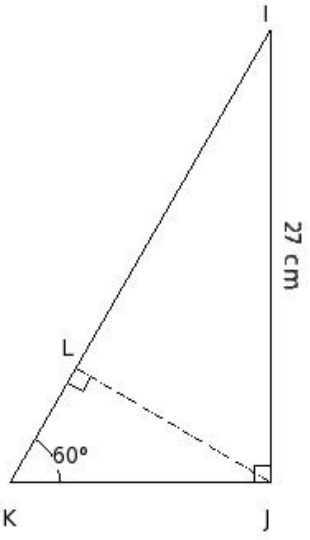
8. $\operatorname{cosec} 30° =$

(i) 1 (ii) 5 (iii) (-1) (iv) 2 (v) 3

9. Given $\sin C = \frac{4}{5}$, find $\cot C$

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

10. In the given figure, $\triangle IKJ$ is right angled at J. If IJ = 27 cm and $\angle K = 60°$, find KL



(i) $\frac{9}{2}$ cm (ii) $\frac{27}{2}$ cm (iii) $\frac{27}{4}\sqrt{2}$ cm (iv) $\frac{9}{2}\sqrt{3}$ cm (v) $\frac{9}{2}\sqrt{18}$ cm

11. $\cos 69° - \sin 21° =$

(i) -1 (ii) $2\sin 21°$ (iii) 0 (iv) $2\sin 69°$ (v) 1

12. Express $\sec 79°$ in terms of $\cot 79°$

(i) $\sqrt{1 + \cot^2 79°}$ (ii) $\frac{1}{\cot 79°}$ (iii) $\frac{\cot 79°}{\sqrt{1 + \cot^2 79°}}$ (iv) $\frac{1}{\sqrt{1 + \cot^2 79°}}$ (v) $\frac{\sqrt{1 + \cot^2 79°}}{\cot 79°}$

13. $\operatorname{cosec} 56° + \sec 73° =$

(i) $\sec 34° + \sec 17°$ (ii) $\operatorname{cosec} 56° + \operatorname{cosec} 73°$ (iii) $\sec 56° + \operatorname{cosec} 73°$ (iv) $\sec 34° + \operatorname{cosec} 17°$

14. Find the value of $\sin 45°\ 20'$

From Table of Natural Sines

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
45	0.7071	0.7083	0.7096	0.7108	0.7120	0.7133	0.7145	0.7157	0.7169	0.7181	2	4	6	8	10

(i) 0.7115 (ii) 0.7116 (iii) 0.7109 (iv) 0.7112 (v) 0.7108

15. Given $\sin F = \frac{5}{13}$, find $\operatorname{cosec} F$

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

16. Given $A = 45°$, $B = 30°$, find $\tan 15°$

(i) $(4-\sqrt{3})$ (ii) $(2+\sqrt{3})$ (iii) $(2-\sqrt{3})$ (iv) $(0-\sqrt{3})$ (v) $(2-3)$

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

(i) 1 (ii) (-1) (iii) 2 (iv) 5 (v) 3

18. Express $\cot\theta$ in terms of $\sin\theta$

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

19. $\frac{\operatorname{cosec} 70°}{\sec 20°} =$

(i) $\tan 70°$ (ii) 0 (iii) -1 (iv) 1 (v) $\tan 20°$

20. Given $\tan B = \frac{7}{15}\sqrt{15}$, find $\sec B$

(i) $\frac{8}{15}\sqrt{15}$ (ii) $\frac{8}{7}$ (iii) $\frac{7}{8}$ (iv) $\frac{1}{7}\sqrt{15}$ (v) $\frac{1}{8}\sqrt{15}$

21. Given that $3\tan\theta = 4$, find $\cos\theta$

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

22. Which of the following are true?

a) $\sin^2\theta + \cos^2\theta = 1, 0 \le \theta \le 90°$

b) $\sin^2\theta - \cos^2\theta = 1, 0 \le \theta \le 90°$

c) $\sec^2\theta + \tan^2\theta = 1, 0 \le \theta \le 90°$

d) $\text{cosec}^2\theta + \cot^2\theta = 1, 0 \le \theta \le 90°$

e) $\sec^2\theta - \tan^2\theta = 1, 0 \le \theta \le 90°$

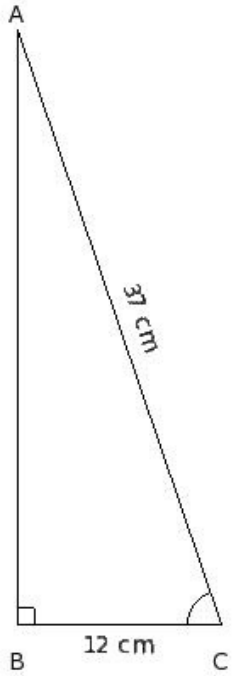
f) $\text{cosec}^2\theta - \cot^2\theta = 1, 0 \le \theta \le 90°$

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

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

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

24. In the given figure, $\cot C =$



(i) $\frac{4}{11}$ (ii) $\frac{12}{37}$ (iii) $\frac{2}{7}$ (iv) $\frac{2}{5}$ (v) $\frac{12}{35}$

25. Find the value of $\tan 65° 25'$

From Table of Natural Tangents

x°	0'	6'	12'	18'	24'	30'	36'	42'	48'	54'	1'	2'	3'	4'	5'
65	2.1445	2.1543	2.1642	2.1742	2.1842	2.1943	2.2045	2.2148	2.2251	2.2355	17	34	51	68	85

(i) 2.1859 (ii) 2.1863 (iii) 2.1862 (iv) 2.1855 (v) 2.1856

Assignment Key

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