

# CHAPTER 12

## Application of Trigonometric

## Exercise 12.1

1. Find the values of:

i.  $\sin 53^\circ 40'$

ii.  $\cos 36^\circ 20'$

iii.  $\tan 19^\circ 30'$

iv.  $\cot 33^\circ 50'$

v.  $\cos 42^\circ 38'$

vi.  $\tan 25^\circ 34'$

vii.  $\sin 18^\circ 31'$

viii.  $\cos 52^\circ 13'$

ix.  $\cot 89^\circ 9'$

i.  $\sin 53^\circ 40'$

**Solution**

$$= \sin (53.667)$$

$$= 0.8058$$

$$\text{Hence } \sin 53^\circ 40' = 0.8058$$

ii.  $\cos 36^\circ 20'$

**Solution**

$$= \cos (36.33)$$

$$= 0.8059$$

$$\text{hence } \cos 36^\circ 20' = 0.8059$$

iii.  $\tan 19^\circ 30'$

**Solution**

$$= \tan (19.5)$$

$$= 0.354$$

$$\text{hence } \cos 19^{\circ}30' = 0.354$$

**iv.  $\cot 33^{\circ} 50'$**

**Solution**

$$= \frac{1}{\tan (33^{\circ}50')}$$

$$= \frac{1}{\tan (33.833)}$$

$$= \frac{1}{0.66702}$$

$$= 1.4921$$

$$\text{hence } \cot 33^{\circ} 50' = 1.4921$$

**v.  $\cos 42^{\circ} 38'$**

**Solution**

$$= \cos 42.633$$

$$= 0.7357$$

$$\text{hence } \cos 42^{\circ} 38' = 0.7357$$

**vi.  $\tan 25^{\circ} 34'$**

**Solution**

$$= \tan 25.567$$

$$= 0.4784$$

$$\text{hence } \cos 42^{\circ} 38' = 0.4784$$

**vii.  $\sin 18^{\circ} 31'$**

**Solution**

$$= \sin 18.35$$

$$= 0.3148$$

$$\text{hence } \sin 18^\circ 31' = 0.3148$$

**viii.  $\cos 52^\circ 13'$**

**Solution**

$$= \cos 52.217$$

$$= 0.6127$$

$$\text{hence } \cos 52^\circ 13' = 0.6127$$

**ix.  $\cot 89^\circ 9'$**

**Solution**

$$= \cot 89.15$$

$$= \frac{1}{\tan 89.15}$$

$$= \frac{1}{67.4018}$$

$$= 0.01486$$

$$\text{hence } \cot 89^\circ 9' = 0.01486$$

**2. Find  $\theta$ , if:**

**i.  $\sin \theta = 0.5791$**

**ii.  $\cos \theta = 0.9316$**

**iii.  $\cos \theta = 0.5257$**

**iv.  $\tan \theta = 1.705$**

**v.  $\tan \theta = 21.943$**

**iv.  $\tan \theta = 1.705$**

**i.  $\sin \theta = 0.5791$**

**Solution**

$$\Rightarrow \theta = \sin^{-1} (0.5791)$$

$$= 35.3872$$

$$\theta = 35^\circ 23' 14''$$

Hence,  $\theta = 35^\circ 23' 14''$

**ii.  $\cos \theta = 0.9316$**

**Solution**

$$\Rightarrow \theta = \cos^{-1} (0.9316)$$

$$= 21.3143$$

$$\theta = 21^\circ 18' 52''$$

Hence,  $\theta = 21^\circ 18' 52''$

**iii.  $\cos \theta = 0.5257$**

**Solution**

$$\Rightarrow \theta = \cos^{-1} (0.5257)$$

$$= 58.2846$$

$$\theta = 58^\circ 17' 5''$$

Hence,  $\theta = 58^\circ 17' 5''$

**iv.  $\tan \theta = 1.705$**

**Solution**

$$\Rightarrow \theta = \tan^{-1} (1.705)$$

$$= 59.6079$$

$$\theta = 59^\circ 36' 29''$$

Hence,  $\theta = 59^\circ 36' 29''$

**v.  $\tan \theta = 21.943$**

**Solution**

$$\Rightarrow \theta = \tan^{-1} (21.943)$$

$$= 87.3906$$

$$\theta = 87^\circ 23' 27''$$

Hence,  $\theta = 87^\circ 23' 27''$

vi.  $\sin \theta = 0.5186$

**Solution**

$$\Rightarrow \theta = \sin^{-1} (0.5186)$$

$$= 31.2839$$

$$\theta = 31^\circ 14' 18''.$$

Hence,  $\theta = 31^\circ 14' 18''$

