

1.2 Calculators and Trig Functions

Notes

1 degree is equal to $1/360$ of a full rotation.

1 minute is equal to $1/60$ of a degree. So there are 60 minutes in 1 degree.

1 second is equal to $1/60$ of a minute. So there are 60 seconds in 1 minute.

$23^\circ 14'$ is read as 23 degrees and 14 minutes

Add or Subtract as indicated.

$$(23^\circ 14') + (12^\circ 42') = 35^\circ 56'$$

$$(68^\circ 44') - (18^\circ 32') = 50^\circ 12'$$

Convert each of the following to degrees and minutes. Round to the nearest minute.

$$34.5^\circ$$

$$34^\circ 30'$$

$$54.45^\circ$$

$$54^\circ 27'$$

$$12.8^\circ$$

$$12^\circ 48'$$

Change each of the following to decimal degrees. If rounding is necessary, round to the nearest hundredth of a degree.

$$32^\circ 19'$$

$$32.31\bar{6}^\circ$$

$$65^\circ 27'$$

$$65.45^\circ$$

$$21^\circ 40'$$

$$21.6\bar{6}^\circ$$

Use a calculator to find each of the following. Round all answers to four places past the decimal point.

$$\sin 43.1^\circ = 0.6833$$

$$\cos 28.7^\circ = 0.8771$$

$$\tan 63.1^\circ = 1.9711$$

$$\csc 23.4^\circ = 2.5180$$

$$\cot 86.2^\circ = 0.0664$$

$$\csc 13.6^\circ = 4.2527$$

Find θ if θ is between 0° and 90° . Round your answers to the nearest tenth of a degree.

$\cos \theta = .8774$

$\theta = 28.7^\circ$

$\tan \theta = .6345$

$\theta = 32.4^\circ$

$\sec \theta = 1.234$

$\theta = 35.9^\circ$

$\cot \theta = .7896$

$\theta = 51.7^\circ$

Use a calculator to find a value of θ between 0° and 90° that satisfies each statement below. Write your answer in degrees and minutes, rounded to the nearest minute.

$\sin \theta = .3474$ $\theta = 20^\circ 19' 42''$

$\cos \theta = .2375$ $\theta = 76^\circ 15' 40''$

$\sec \theta = 1.4398$ $\theta = 43^\circ 59' 24''$

$\cot \theta = .5846$ $\theta = 59^\circ 41' 22''$

Guided Practices

Use a calculator to find each of the following. Round all answers to four places past the decimal point.

1. $\sin 25.4^\circ = .4289$

$= .4289$

2. $\cos 16^\circ = .9613$

$= .9613$

3. $\tan 85.12^\circ = 11.7125$

$= 11.7125$

4. $\cot 54^\circ = .7265$

$= .7265$

5. $\sec 64.7^\circ = 2.314$

$= 2.314$

6. $\csc 19.21^\circ = 3.039$

$= 3.039$

7. $\cos 19^\circ 30' = .9426$

$= .9426$

8. $\tan 38^\circ 15' = .7883$

$= .7883$

9. $\sin 64^\circ 40' = .9038$

$= .9038$

10. $\sec 42^\circ 54' = 1.3651$

$= 1.3651$

Find θ if θ is between 0° and 90° . Round your answers to the nearest tenth of a degree.

11. $\cos \theta = .9685$

$\theta = 14.4^\circ$

12. $\sin \theta = .8821$

$\theta = 61.9^\circ$

13. $\tan \theta = .2456$

$\theta = 13.8^\circ$

14. $\cos \theta = .2723$

$\theta = 74.2^\circ$

15. $\sin \theta = .1993$

$\theta = 11.5^\circ$

16. $\tan \theta = .4663$

$\theta = 25.0^\circ$

Use a calculator to find a value of θ between 0° and 90° that satisfies each statement below. Write your answer in degrees and minutes, rounded to the nearest minute.

17. $\cos \theta = .9258$

$\theta = 22^\circ 12' 39''$

18. $\sin \theta = .6481$

$\theta = 40^\circ 23' 54''$

19. $\tan \theta = .8541$

$\theta = 40^\circ 30'$

Recall from Section 2.1:

If $\sin A = .8570$ and $\cos B = .8870$, then what do we know about A and B? Find the values for A and B to justify your conclusion.

$A + B = 90^\circ$

Complete.

5. $\cos 22^\circ = \frac{2}{9.27}$

9.27

6. $\sin 79^\circ = \frac{7}{9.816}$

9.816

7. $\cos 24^\circ = 0.7771$

39°

11. Find the values of x and y to the nearest integer.

11. 

$\sin 57 = \frac{y}{34}$

$x = 26.8$

$y = 20.9$

12. 

$\sin 70 = \frac{y}{75}$

$x = 70.47$

$y = 25.7$

13. 

$\sin 43 = \frac{y}{16}$

$y = 10.9$

$x = 11.7$

14. 

$\sin 24 = \frac{y}{10}$

$y = 4.1$

$x = 9.1$