

### Trigonometry Review

For problems 16-23, you may use your calculator. For the rest of the problems, you should be working without your calculator.

#1-15: Evaluate.

1.  $\sin 210^\circ$     2.  $\cos 330^\circ$     3.  $\cot 300^\circ$     4.  $\sec 225^\circ$     5.  $\csc 90^\circ$

6.  $\tan \frac{3\pi}{2}$     7.  $\sin\left(-\frac{5\pi}{6}\right)$     8.  $\cot\left(-\frac{5\pi}{4}\right)$     9.  $\cos \frac{8\pi}{3}$     10.  $\sin \frac{2\pi}{3}$

11.  $\tan \frac{5\pi}{6}$     12.  $\sec \frac{7\pi}{3}$     13.  $\sin 19\pi$     14.  $\tan \frac{39\pi}{4}$     15.  $\csc\left(-\frac{17\pi}{6}\right)$

#16-21: Solve each triangle. Give angles to the nearest degree.

16.  $C = 90^\circ$ ,  $a = 2$ ,  $c = 7$     17.  $C = 90^\circ$ ,  $a = 9.4$ ,  $A = 27^\circ$     18.  $a = 10$ ,  $b = 12$ ,  $c = 15$   
 19.  $A = 55^\circ$ ,  $b = 17$ ,  $c = 21$     20.  $A = 32^\circ$ ,  $b = 20$ ,  $a = 13$     21.  $A = 59^\circ$ ,  $B = 17^\circ$ ,  $a = 23$

22. Find the area of a triangle with sides of length 19 cm and 31 cm and included angle  $97^\circ$ .

23. Find the area of a triangle with sides of length 32 ft, 55ft, and 71 ft.

24.  $\sin \theta = \frac{\sqrt{11}}{4}$  and  $\tan \theta < 0$ .

Find  $\sec \theta$ .

25.  $\sec \alpha = -10$  and  $\csc \alpha < 0$ .

Find  $\tan \alpha$ .

#26-31: If  $\sin \theta = -\frac{9}{10}$  and  $\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{2}$ , evaluate each of the following.

26.  $\sec \theta$     27.  $\cot \theta$     28.  $\sin 2\theta$

29.  $\cos 2\theta$     30.  $\sin \frac{\theta}{2}$     31.  $\cos \frac{\theta}{2}$

#32-37: If  $\tan \alpha = -\frac{3}{4}$ , for  $\frac{\pi}{2} \leq \alpha \leq \frac{3\pi}{2}$  and  $\cos \beta = \frac{2}{5}$ , for  $0 \leq \beta \leq \pi$ , evaluate each of the following.

32.  $\sin \alpha$     33.  $\tan \beta$     34.  $\sin(\alpha - \beta)$

35.  $\cos(\alpha + \beta)$     36.  $\sin 2\alpha$     37.  $\cos \frac{\beta}{2}$

#38-40: If  $\cos \alpha = \frac{2}{3}$  and  $\pi < \alpha < 2\pi$ , evaluate each of the following.

38.  $\csc \alpha$     39.  $\cos 2\alpha$     40.  $\cos \frac{\alpha}{2}$

**#41-53:** Find the exact value of each of the following.

$$\begin{array}{llll}
 41. \sin^{-1} \frac{\sqrt{3}}{2} & 42. \tan^{-1}(-1) & 43. \sin^{-1} 2 & 44. \cos^{-1}\left(-\frac{1}{2}\right) \\
 45. \tan^{-1} \frac{1}{\sqrt{3}} & 46. \cos^{-1} 0 & 47. \tan\left(\sin^{-1} \frac{3}{7}\right) & 48. \csc\left(\tan^{-1}\left(-\frac{1}{4}\right)\right) \\
 49. \sin\left(\cos^{-1} \frac{\sqrt{7}}{5}\right) & 50. \sin\left(2\sin^{-1}\left(-\frac{1}{3}\right)\right) & 51. \cos\left(2\cos^{-1}\left(-\frac{5}{6}\right)\right) & \\
 52. \cos\left(\tan^{-1} 3 - \sin^{-1} \frac{5}{6}\right) & & 53. \sin\left(\tan^{-1}\left(-\frac{1}{2}\right) + \sin^{-1}\left(-\frac{3}{\sqrt{11}}\right)\right) & 
 \end{array}$$

**#54, 55:** Rewrite the expression as an algebraic expression in  $x$ .

$$54. \cos(\sin^{-1} x) \quad 55. \csc(\tan^{-1} x)$$

**#56-67:** Sketch one cycle of the graph of each of the following.

$$\begin{array}{llll}
 56. y = 4\sin x & 57. y = \cos 2x & 58. y = -\sin \frac{1}{2}x & 59. y = \tan(-2x) \\
 60. y = 1 + \sin(-x) & 61. y = 4\sec(-3x) & 62. y = \sin\left(x + \frac{\pi}{3}\right) & 63. y = -\frac{1}{5}\cos\left(x - \frac{\pi}{4}\right) \\
 64. y = 2 + \sin\left(2x + \frac{\pi}{3}\right) & 65. y = \frac{1}{2}\cos\left(x - \frac{\pi}{3}\right) & 66. y = \cot \frac{x}{10} & 67. y = 25\csc\left(\pi x - \frac{\pi}{6}\right)
 \end{array}$$