

Exercises 8.2

In Exercises 1–14, find the exact functional value without using a calculator.

1. $\sin^{-1} 1$

2. $\cos^{-1} 0$

3. $\tan^{-1}(-1)$

4. $\sin^{-1}(-1)$

5. $\cos^{-1} 1$

6. $\tan^{-1} 1$

7. $\tan^{-1} \frac{\sqrt{3}}{3}$

8. $\cos^{-1} \frac{\sqrt{5}}{2}$

9. $\sin^{-1} \left(-\frac{\sqrt{2}}{2} \right)$

10. $\sin^{-1} \frac{\sqrt{3}}{2}$

In Exercises 15–24, use a calculator in radian mode to approximate the functional value.

15. $\sin^{-1} 0.35$

16. $\cos^{-1} 0.76$

17. $\tan^{-1}(-3.256)$

18. $\sin^{-1}(-0.795)$

19. $\sin^{-1}(\sin 7)$ *Hint: the answer is not 7.*

20. $\cos^{-1}(\cos 3.5)$

21. $\tan^{-1}[\tan(-4)]$

22. $\sin^{-1}[\sin(-2)]$

23. $\cos^{-1}[\cos(-8.5)]$

24. $\tan^{-1}(\tan 12.4)$

In Exercises 27–42, find the exact functional value without using a calculator.

27. $\sin^{-1}(\cos 0)$

28. $\cos^{-1} \left(\sin \frac{\pi}{6} \right)$

29. $\cos^{-1} \left(\sin \frac{4\pi}{3} \right)$

30. $\tan^{-1}(\cos \pi)$

31. $\sin^{-1}\left(\cos\frac{7\pi}{6}\right)$

32. $\cos^{-1}\left(\tan\frac{7\pi}{4}\right)$

33. $\sin^{-1}\left(\sin\frac{2\pi}{3}\right)$

34. $\cos^{-1}\left(\cos\frac{5\pi}{4}\right)$

35. $\cos^{-1}\left[\cos\left(-\frac{\pi}{6}\right)\right]$

36. $\tan^{-1}\left[\tan\left(-\frac{4\pi}{3}\right)\right]$

37. $\sin\left[\cos^{-1}\left(\frac{3}{5}\right)\right]$ (See Example 6.)

38. $\tan\left[\sin^{-1}\left(\frac{3}{5}\right)\right]$

39. $\cos\left[\tan^{-1}\left(-\frac{3}{4}\right)\right]$

40. $\cos\left[\sin^{-1}\left(\frac{\sqrt{3}}{5}\right)\right]$

41. $\tan\left[\sin^{-1}\left(\frac{5}{13}\right)\right]$

42. $\sin\left[\cos^{-1}\left(\frac{\sqrt{3}}{13}\right)\right]$

In Exercises 43–46, write the expression as an algebraic expression in v , as in Example 4.

43. $\cos(\sin^{-1}v)$

44. $\cot(\cos^{-1}v)$

45. $\tan(\sin^{-1}v)$