

2023-2024

Name _____ Date _____ Period _____

Find all angles in the interval $[0^\circ, 360^\circ)$ that satisfy each equation.

1. $\cos(\alpha) = \frac{\sqrt{3}}{2}$

2. $\sin(\alpha) = -\frac{\sqrt{2}}{2}$

3. $\tan(\alpha) = \sqrt{3}$

4. $\sin(\alpha) - 1 = -\frac{1}{2}$

Find all angles in the interval $[0, 2\pi)$ that satisfy each equation.

5. $\cos(\alpha) = -\frac{1}{2}$

6. $\sqrt{3} \tan(\alpha) + 1 = 0$

7. $4\sin(\alpha) - 2\sqrt{3} = 0$

8. $\tan(\alpha) = -1$

Find all angles in degrees that satisfy each equation.

9. $2\cos(\alpha) - \sqrt{2} = 0$

10. $\tan(\alpha) - 1 = 0$

11. $\tan(\alpha) = -1$

12. $\sin(\alpha) = -1$

13. $\sqrt{2}\sin(\alpha) = 1$

14. $2\cos(\alpha) + \sqrt{3} = 0$

Find all real numbers in terms of π that satisfy each equation.

15. $\sin(x) = -1$

16. $\tan(x) = -1$

17. $\cos(x) = \frac{1}{2}$

18. $\sin(x) = \frac{\sqrt{2}}{2}$

19. $\tan(x) = \frac{1}{\sqrt{3}}$

20. $\cos(x) = \frac{-\sqrt{3}}{2}$

21. $2\sin(x) + \sqrt{2} = 0$

22. $\tan(x) + \sqrt{3} = 0$

23. $\cos x = 0$

24. $\sin(x) + 2 = 0$

25. $\tan(x) = 0$

26. $\sin(x) + 3 = 3$

Find all angles in the interval $[0^\circ, 360^\circ)$ that satisfy each equation. Round approximations to the nearest tenth of a degree.

27. $\cos(\alpha) = 0.873$

28. $\sin(\alpha) = -0.244$

29. $\tan(\alpha) = 5.42$

30. $\sin(\alpha) - 1 = -0.3639$

Find all angles in the interval $[0, 2\pi)$ that satisfy each equation. Round to the nearest hundredth.

31. $\cos(\alpha) = 0.66$

32. $\sqrt{6} \tan(\alpha) - 1 = 0$

33. $7 \sin(\alpha) - \sqrt{7} = 0$

34. $\tan(\alpha) = -0.8423$

Solve each equation. Round to the nearest hundredth.

35. $\frac{\sin \alpha}{23.4} = \frac{\sin 67.2^\circ}{25.9}$ for $0^\circ < \alpha < 90^\circ$

36. $(3.6)^2 = (5.4)^2 + (8.2)^2 - 2(5.4)(8.2)\cos \alpha$ for $0^\circ < \alpha < 90^\circ$

37. Solve $t = -6\sin(m) + 2$ for m where $\frac{-\pi}{2} \leq m \leq \frac{\pi}{2}$

$$38. \frac{\sin 33.2^\circ}{a} = \frac{\sin 45.6^\circ}{13.7}$$

Find all real numbers in degrees that satisfy the equation. Round approximate answers to 2 decimal places.

$$39. 3 = 5 \sin(x) + 1$$

Find the exact value of each expression without using a calculator or table. Write both the degrees and radians.

$$40. a) \arcsin\left(\frac{1}{2}\right)$$

$$b) \cos^{-1}\left(\frac{-1}{2}\right)$$

$$c) \tan^{-1}(-1)$$

$$d) \sin\left(\frac{\pi}{3}\right)$$

$$e) \cos\left(\frac{-\pi}{2}\right)$$

$$f) \sin^{-1}(-1)$$

41. A sector of a circle has a central angle of $\frac{\pi}{6}$. Find the exact area of the sector if the radius of the circle is 6 inches.