

Worksheet Section 4.1-4.3

Short Answer

Change the degree measure to radian measure. Exact value only.

1. 8°
2. 230°
3. -366°

Change the radian measure to degree measure. Exact value only.

4. $\frac{\pi}{12}$
5. $\frac{8\pi}{3}$
6. $\frac{-3\pi}{5}$

In each case, find the smallest positive coterminal angle.

7. 422°
8. -95°

Express the given function as a function of a positive acute angle.

9. $\tan(-93^\circ)$
10. $\cos\left(\frac{11\pi}{4}\right)$

Find the quadrant where the following angles lie in.

11. $\frac{-5\pi}{3}$
12. -152°
13. $\sec \theta < 0, \cot \theta > 0$
14. $\csc \theta < 0, \sec \theta > 0$
15. Find the exact length of the radius on a circle which intercepts an arc of length 12π ft and is subtended by the central angle of $\frac{4\pi}{3}$ radians.

- ANSWERS:
- 1) $\frac{45}{2}\pi$ 2) $\frac{18}{23}\pi$ 3) $-\frac{61\pi}{30}$ 4) 15° 5) 480° 6) -108° 7) 62° 8) 265° 9) $\tan 87^\circ$ 10) $-\cos \frac{\pi}{4}$
- 11) QI 12) QIII 13) QIII 14) QIV 15) $r = 9\text{ft}$ 16) -1 17) $\frac{2}{18}$ 18) $\sqrt{3}$ 19) 0 20) $-\frac{1}{2}$

Find the exact value.

16. $\csc 270^\circ$

17. $\sin 390^\circ$

18. $\tan(-300^\circ)$

19. $\cot(-270^\circ)$

20. $\sin 330^\circ$

21. $\cot 720^\circ$

22. $\cos 150^\circ$

23. $\cos 0^\circ$

24. $\tan(-450^\circ)$

25. $\csc(-135^\circ)$

26. $\sec(-480^\circ)$

27. $\cos 135^\circ$

28. $\tan(-30^\circ)$

29. $\cos\left(\frac{\pi}{6}\right)$

30. $\sin\left(\frac{-7\pi}{3}\right)$

31. $\cos(-4\pi)$

32. $\csc\left(\frac{5\pi}{6}\right)$

33. $\cos\left(\frac{3\pi}{2}\right)$

34. $\sec\left(\frac{-3\pi}{4}\right)$

35. $\sin\left(\frac{15\pi}{2}\right)$

36. $\tan\left(\frac{9\pi}{4}\right)$

37. $\tan\left(\frac{5\pi}{4}\right)$

38. $\sin(\pi)$

39. $\sin\left(\frac{2\pi}{3}\right)$

40. $\cos\left(\frac{-17\pi}{3}\right)$

41. $\cot\left(\frac{-\pi}{6}\right)$

42. $\sin\left(\frac{5\pi}{4}\right)$

43. $\tan^2 60^\circ + \cot 45^\circ$

44. $\tan\left(\frac{\pi}{4}\right) \cdot \sin\left(\frac{\pi}{6}\right)$

45. $\cot\left(\frac{\pi}{2}\right) + \sec 2\pi$

Find the value of the following functions. Round your answer to four decimal places.

46. $\tan 61^\circ 23'$

47. $\sec 280^\circ 45' 52''$

Find the exact value of the following trigonometric functions by using triangles.

48. If $\cot \theta = \frac{-4}{3}$ and $\sin \theta = \frac{3}{5}$, find $\cos \theta$.

49. If $\cos \theta = \frac{-5}{13}$ and $\tan \theta = \frac{12}{5}$, find $\sec \theta$.

50. If $\cos \theta = \frac{-2}{3}$ and $\csc \theta < 0$, find $\tan \theta$.

ANSWERS: (21) undefined (22) $-\frac{\sqrt{3}}{2}$ (23) 1 (24) undefined (25) $-\sqrt{2}$ (26) -2 (27) $-\frac{2}{\sqrt{2}}$ (28) $-\frac{3}{\sqrt{3}}$ (29) $\frac{2}{\sqrt{3}}$ (30) $-\frac{\sqrt{3}}{2}$ (31) 1 (32) 2 (33) 0 (34) $-\sqrt{2}$ (35) -1 (36) 1 (37) 1 (38) 0 (39) $\frac{2}{\sqrt{3}}$ (40) $\frac{1}{2}$ (41) $-\sqrt{3}$ (42) $-\frac{\sqrt{2}}{2}$ (43) 4 (44) $\frac{1}{2}$ (45) 1 (46) 1.8329 (47) 5.3541 (48) $-\frac{5}{4}$ (49) $-\frac{5}{13}$ (50) $\frac{\sqrt{5}}{2}$