

Find the measure of an angle between 0° and 360° coterminal with each given angle.

1. -323°

2. -4°

3. 370°

Sketch each angle in standard position.

4. 15°

5. -230°

6. 395°

Write each measure in radians. Express the answer in terms of π .

7. 315°

8. -450°

9. 210°

Write each measure in degrees. If necessary, round your answer to the nearest degree.

10. $\frac{7\pi}{4}$

11. $\frac{5\pi}{3}$

12. 6π

Find the exact values of $\cos\theta$ and $\sin\theta$ for each angle measure.

13. -480°

14. 135°

15. $-\frac{2\pi}{3}$ radians

Find the amplitude and period of each function. Then sketch one cycle of the graph of each function.

16. $y = 3 \sin 4x$

17. $y = -2 \sin 8x$

Write a cosine function for each description.

18. amplitude = $\frac{1}{4}$, period = 2, $a > 0$

19. amplitude = 3, period = $\frac{\pi}{2}$, $a < 0$

Graph one cycle of each function.

20. $y = 2 \cos 2\theta$

21. $y = \frac{1}{2} \tan \frac{\pi}{2} \theta$

Write an equation for each translation.

22. $y = \cos x$, 4 units to the left

23. $y = \sin x$, $\frac{\pi}{4}$ units right, 2 units up

Evaluate each expression. Write your answer in exact form. If the expression is undefined, write *undefined*.

24. $\sec(-30^\circ)$

25. $\csc(3\pi/2)$

26. $\cot(-17\pi/6)$

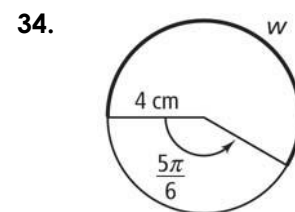
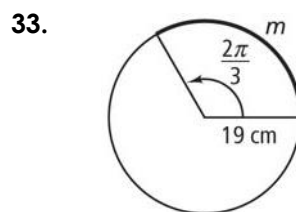
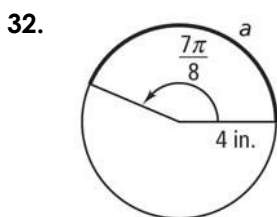
27. $\sec -990^\circ$

Describe the transformations for the following:

28. $y = \cos(\theta - \pi) + 2$

30. $y = -\sin\left(x - \frac{\pi}{4}\right) + 1$

Use each circle to find the length of the indicated arc then the area. Round your answer to the nearest tenth.



Simplify each trigonometric expression.

35. $\tan^2 \theta - \sec^2 \theta$

36. $\sin \theta \sec \theta$

37. $\frac{\tan \theta \sin \theta}{\cos \theta}$

Verify each identity.

38. $\sin \theta \sec \theta \cot \theta = 1$

39. $\csc \theta = \cot \theta \sec \theta$

40. $\cos \theta \csc \theta \tan \theta = 1$