

For Problems 1 through 8, find the exact number of radians in angles of measure:

1. 60°
2. 45°
3. 30°
4. 120°
5. 180°
6. 450°
7. -225°
8. 1080°

For Problems 9 through 18, find the exact number of degrees in angles of radian measure:

9. $\frac{\pi}{3}$
10. $\frac{\pi}{2}$
11. $\frac{\pi}{6}$
12. $\frac{\pi}{12}$
13. $\frac{\pi}{4}$
14. $\frac{2\pi}{3}$
15. $\frac{3\pi}{4}$
16. π
17. $\frac{3\pi}{2}$
18. $\frac{5\pi}{6}$

For Problems 19 through 24, find the exact value of the function of the given number of radians.

19. $\sin \frac{\pi}{3}$
20. $\cos \frac{3\pi}{4}$
21. $\tan \pi$
22. $\cot \frac{7\pi}{6}$
23. $\sec 2\pi$
24. $\csc \frac{4\pi}{3}$

For Problems 25 through 34, evaluate the expression, leaving the answer in simple radical form.

25. $\sin \frac{\pi}{2} + 6 \cos \frac{\pi}{3}$
26. $\csc \frac{\pi}{2} \sin \frac{\pi}{2}$
27. $4 \sin \frac{\pi}{3} \cos \frac{\pi}{3}$
28. $\sin \frac{2\pi}{3} \cos \frac{5\pi}{6} - \cos \frac{2\pi}{3} \sin \frac{5\pi}{6}$
29. $\sec \frac{\pi}{4} \sin \frac{\pi}{4} - \tan \frac{3\pi}{4} \csc \frac{\pi}{3}$
30. $\cos^2 \pi + \sin^2 \pi$
31. $\tan^2 \frac{\pi}{6} - \csc^2 \frac{\pi}{6}$
32. $\cos^2 \frac{3\pi}{4} - \sin^2 \frac{\pi}{3}$
33. $\frac{\cos \frac{5\pi}{3}}{\sin \frac{5\pi}{3}}$
34. $\tan \frac{\pi}{6} \cot \frac{\pi}{3} + \tan \frac{\pi}{4}$

Answers:

1. $\frac{\pi}{3}$
2. $\frac{\pi}{4}$
3. $\frac{\pi}{6}$
4. $\frac{2\pi}{3}$
5. π
6. $\frac{5\pi}{2}$
7. $-\frac{5\pi}{4}$
8. 6π
9. 60°
10. 90°
11. 30°
12. 15°
13. 45°
14. 120°
15. 135°
16. 180°
17. 270°
18. 150°
19. $\frac{\sqrt{3}}{2}$
20. $-\frac{\sqrt{2}}{2}$
21. 0
22. $\sqrt{3}$
23. 1
24. $-\frac{2\sqrt{3}}{3}$
25. 4
26. 1
27. $\sqrt{3}$
28. $-\frac{1}{2}$
29. $1 + \frac{2\sqrt{3}}{3}$
30. 1
31. $-\frac{11}{3}$
32. $-\frac{1}{4}$
33. $-\frac{\sqrt{3}}{3}$
34. $\frac{4}{3}$