

Practice 13-8**Reciprocal Trigonometric Functions**

Evaluate each expression. Each angle is given in radians. Round to the nearest hundredth, if necessary.

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| 1. $\cot 4$ | 2. $\csc \frac{\pi}{6}$ | 3. $\csc (-2)$ | 4. $\sec \pi$ |
| 5. $\cot (-\pi)$ | 6. $\sec (-3.5)$ | 7. $\cot \frac{\pi}{3}$ | 8. $\sec 1.5$ |
| 9. $\csc (-1.5)$ | 10. $\cot \pi$ | 11. $\sec 3$ | 12. $\csc \frac{\pi}{4}$ |

Evaluate each expression. Write your answer in exact form. If appropriate, also state it as a decimal rounded to the nearest hundredth. If the expression is undefined, write *undefined*.

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| 13. $\sec 45^\circ$ | 14. $\cot 180^\circ$ | 15. $\sec 30^\circ$ | 16. $\csc 30^\circ$ |
| 17. $\cot (-180^\circ)$ | 18. $\csc (-45^\circ)$ | 19. $\csc 180^\circ$ | 20. $\cot 45^\circ$ |
| 21. $\sec 90^\circ$ | 22. $\sec (-30^\circ)$ | 23. $\csc (-60^\circ)$ | 24. $\sec 60^\circ$ |
| 25. Suppose $\tan \theta = \frac{6}{9}$. Find $\cot \theta$ | 26. Suppose $\sin \theta = \frac{2}{5}$. Find $\csc \theta$ | | |
| 27. Suppose $\cos \theta = \frac{14}{20}$. Find $\sec \theta$ | 28. Suppose $\tan \theta = -\frac{2}{3}$. Find $\cot \theta$ | | |

Graph each function in the interval from 0 to 2π .

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| 29. $y = \cot 2\theta$ | 30. $y = -\cot \frac{1}{2}\theta$ | 31. $y = \sec \left(\theta - \frac{\pi}{2} \right)$ |
| 32. $y = \csc 2\theta + 1$ | 33. $y = -\csc 3\theta$ | 34. $y = \sec \theta + 2$ |
| 35. $y = \cot (\theta + \pi)$ | 36. $y = \sec \frac{1}{4}\theta$ | 37. $y = \csc \theta - 1$ |

Use the graph of the appropriate reciprocal trigonometric function to find each value. Round to the nearest hundredth, if necessary.

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| 38. $\cot 30^\circ$ | 39. $\csc 180^\circ$ | 40. $\cot 70^\circ$ | 41. $\sec 100^\circ$ |
| 42. $\sec 50^\circ$ | 43. $\csc 100^\circ$ | 44. $\cot 20^\circ$ | 45. $\sec 120^\circ$ |
46. A fire truck is parked on the shoulder of a freeway next to a long wall. The red light on the top of the truck rotates through one complete revolution every 2 seconds. The function $y = 10 \sec \pi t$ models the length of the beam in feet to a point on the wall in terms of time t .
- Graph the function.
 - Find the length at time 1.75 seconds
 - Find the length at time 2 seconds.