

$$1. \sin \theta = \frac{y}{r} \quad \csc \theta = \frac{r}{y}$$

$$\cos \theta = \frac{x}{r} \quad \sec \theta = \frac{r}{x}$$

$$\tan \theta = \frac{y}{x} \quad \cot \theta = \frac{x}{y}$$

1.9 Unit 1 Review

Determine the exact values of the six trig functions that correspond to the given point.

1. (4, 3) $\sin \theta = \frac{\sqrt{17}}{17}$ $\csc \theta = \sqrt{17}$

2. (-4, 1) $\cos \theta = -\frac{4\sqrt{17}}{17}$ $\sec \theta = -\frac{\sqrt{17}}{4}$

$\tan \theta = -\frac{1}{4}$ $\cot \theta = -4$

Vocabulary/Topics to Know:

- standard position
- terminal ray
- initial ray
- quadrantal angles
- negative angles vs. positive angles
- radian measure vs. degree measure
- coterminal angles
- reference angles
- Unit Circle
- undefined

State the quadrant in which the terminal ray of θ lies.

3. $\sin \theta < 0$ and $\cos \theta < 0$ III
4. $\sin \theta > 0$ and $\tan \theta < 0$ II
5. $\sin \theta > 0$ and $\cos \theta > 0$ I
6. $\tan \theta < 0$ and $\sec \theta > 0$ IV

Find the values of the six trig functions.

7. $\sin \theta = \frac{3}{5}$ θ is in Quadrant II
 $\cos \theta = -\frac{4}{5}$ $\csc \theta = \frac{5}{3}$
 $\tan \theta = -\frac{3}{4}$ $\sec \theta = -\frac{5}{4}$
 $\cot \theta = -\frac{4}{3}$

8. $\tan \theta = -\frac{15}{8}$ and $\sin \theta < 0$
 $\sin \theta = -\frac{15}{17}$ $\csc \theta = -\frac{17}{15}$
 $\cos \theta = \frac{8}{17}$ $\sec \theta = \frac{17}{8}$
 $\cot \theta = -\frac{8}{15}$

9. 295° 10. 85° 11. $\frac{3\pi}{4}$ 12. $\frac{11\pi}{6}$

$\theta' = 65^\circ$ $\theta' = 85^\circ$ $\theta' = \frac{\pi}{4}$ $\theta' = \frac{\pi}{6}$

Find one coterminal angle with counter-clockwise rotation AND with clockwise rotation for the given angle.

13. 261°
 CW: -99°
 CCW: 621°

14. $\frac{5\pi}{11}$
 CW: $-\frac{17\pi}{11}$
 CCW: $\frac{27\pi}{11}$

15. What does it mean for an angle to be in standard position?

vertex is on the origin, initial side is on the positive x-axis and the terminal side is measured positive counter-clockwise

16. How do you convert degrees to radians? AND then radians to degrees?
 multiply by $\frac{\pi}{180}$ multiply by $\frac{180}{\pi}$
17. Write an equation of the sine function with amplitude 1/2, period 2, and vertical shift down 4.
 period: $\frac{2\pi}{b} = 2$ $y = \frac{1}{2} \sin(\pi x) - 4$
 $b = \pi$
18. State the period of the function $y = \sin(\pi/4 x)$. 8
 $\frac{2\pi}{\pi/4} = 8$
19. Where does the maximum value occur $[0, 2\pi)$ for the function $y = -3\cos(x + \pi/4)$ $X = \frac{3\pi}{4}$
 x-value only highest point
20. Where do the asymptotes occur for one period of $y = \csc(x) + 1$ $X = 0, \pi, 2\pi$
 where sine = 0

Graph each function. Fill in the blanks and label key points.



