4.16 Unit Circle Trigonometry Extension Worksheet

The given point lies on the terminal side of an angle θ in standard position. Find the values of the six trigonometric functions of θ.

1. (1, -8)

2. (-8, 15)

State the quadrant or axis where the terminal side of θ is found.

3. $\sin\theta < 0$ and $\cos\theta < 0$ Q3

4. $\tan\theta > 0$ and $\sec\theta > 0$ Q1

5. $\cos\theta > 0$ and $\cot\theta < 0$ Q4

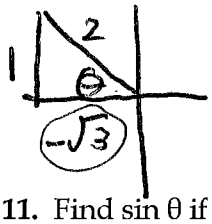
6. $\sec\theta < 0$ and $\sin\theta = 0$ negative x-axis
   ($\cos < 0$; x-axis)

7. $\cos\theta = 0$ and $\csc\theta > 0$ positive y-axis

8. $\cot\theta < 0$ and $\cos\theta < 0$ Q2

First, state the quadrant or axis where the terminal side of θ is found. Then, find the exact value of the specified trigonometric function using the given information.

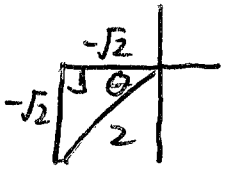
9. Find $\cos\theta$ if $\sin\theta = \frac{1}{2}$ and $\tan\theta < 0$.



Quadrant: 2

$\cos\theta =$ $-\sqrt{3}/2$

10. Find $\tan\theta$ if $\cos\theta = -\frac{\sqrt{2}}{2}$ and $\sin\theta < 0$.



Quadrant: 3

$\tan\theta =$ 1

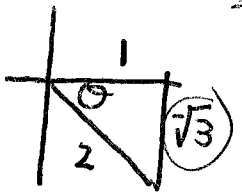
11. Find $\sin\theta$ if $\sec\theta$ is undefined and $\csc < 0$.

(0, -1)

Quadrant: neg. y-axis

$\sin\theta =$ -1

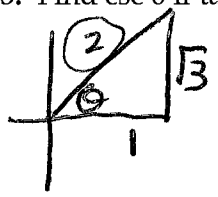
12. Find $\cot\theta$ if $\sec\theta = 2$ and $\csc\theta < 0$.



Quadrant: 4

$\cot\theta =$ $\frac{1}{-\sqrt{3}} = -\frac{\sqrt{3}}{3}$

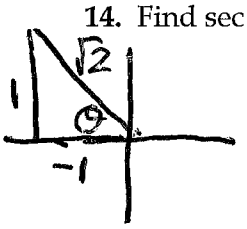
13. Find $\csc\theta$ if $\tan = \sqrt{3}$ and $\sec\theta > 0$



Quadrant: 1

$\csc\theta =$ $\frac{2}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

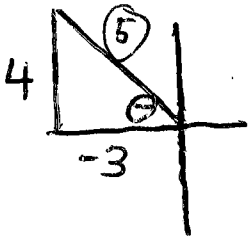
14. Find $\sec\theta$ if $\cot\theta = -1$ and $\sin\theta > 0$



Quadrant: 2

$\sec\theta =$ $\frac{-\sqrt{2}}{1} = -\sqrt{2}$

15. Find $\sec\theta$ and $\csc\theta$ if $\tan\theta = -\frac{4}{3}$ and $\cos\theta < 0$.



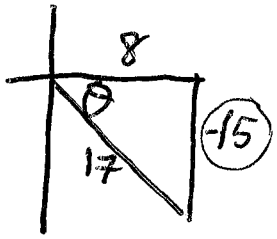
Quadrant: 2

$\sec\theta =$ 4/5

$\csc\theta =$ 5/4

16. Find $\csc x$ and $\cos x$ if $\sec\theta = \frac{17}{8}$ and $\sin\theta < 0$.

Cos(+)
Sin(-)

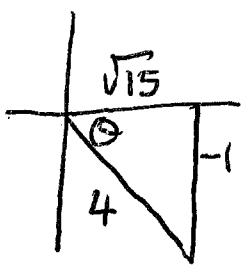


Quadrant: 4

$\csc\theta =$ $\frac{17}{-15}$

$\cos\theta =$ 8/17

17. Find $\cos\theta$ and $\cot\theta$ if $\sin\theta = -\frac{1}{4}$ and $\tan\theta < 0$.

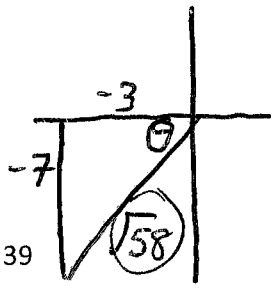


Quadrant: 4

$\cos\theta =$ $\sqrt{15}/4$

$\cot\theta =$ $-\sqrt{15}$

18. Find $\sin\theta$ and $\cos\theta$ if $\cot\theta = \frac{3}{7}$ and $\sec\theta < 0$.



Quadrant: 3

$\sin\theta =$ $\frac{-7}{\sqrt{58}}$ $\frac{-7\sqrt{58}}{58}$

$\cos\theta =$ $\frac{-3}{\sqrt{58}}$ $\frac{-3\sqrt{58}}{58}$