Key

Unit Circle and Right Triangle Trigonometry

Solve the equation if $0° \leq \theta \leq 360°$.

1. Cos $\theta = ½$ $\theta = 60°$ $\theta = 300°$

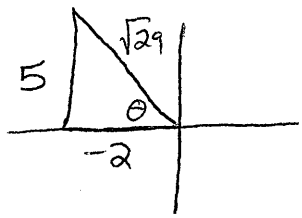
Using the given point, find the values of the six trigonometric functions.

2. (-2,5)

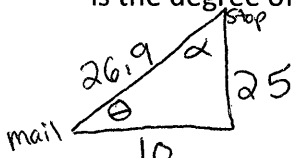
Sin $\theta = \frac{5\sqrt{29}}{29}$ Csc $\theta = \sqrt{29}/5$

Cos $\theta = -2\sqrt{29}/29$ Sec $\theta = -\sqrt{29}/2$

Tan $\theta = \frac{-5}{2}$ Cot $\theta = -2/5$



3. Starting at his mailbox, a boy walks 10 feet, in a straight line, and stops at a stop sign. He then turns 90° to the left and walks in a straight line 25 feet across the street to the next stop sign. What is the distance of the most direct route back to his mailbox? What is the degree of the angle formed at the mailbox? The angle at the second stop sign?



26.9 feet

$\theta = 68.2°$ $\alpha = 21.8°$

4. Find the reference angle for each angle given below:

a) 127° **b)** 262° **c)** 285° **d)** 2.5^R **e)** 5.47^R

53° 82° 75° $.64^R$ $.81^R$

Give the coordinate point on the unit circle that corresponds with the given angles.

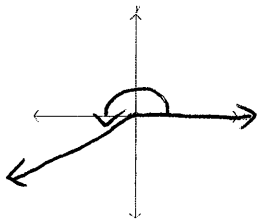
5. 210° $\left(\frac{-\sqrt{3}}{2}, \frac{-1}{2}\right)$

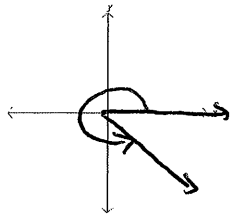
6. $\frac{9\pi}{4}$ $\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$

Sketch the angle, and then find the reference angle.

7. 217° Ref = 37°

9. $\frac{7\pi}{4}$ Ref = $\frac{\pi}{4}$





Identify one positive and one negative coterminal angle for each:

10. 160° $520°$, $-200°$

11. $\frac{\pi}{8}$ $\left(2\pi = \frac{16\pi}{8}\right)$ $\frac{17\pi}{8}, \frac{-15\pi}{8}$

Convert each radian measurement to degrees:

12. $\frac{7\pi}{12} \cdot \frac{180}{\pi} = \boxed{105°}$

13. $\frac{11\pi}{18} \cdot \frac{180}{\pi} = \boxed{110°}$

Evaluate each trigonometric ratio:

14. tan 45° $= 1$

15. cot $\frac{5\pi}{6}$ $\left(\frac{-\sqrt{3}/2}{1/2}\right)$ $= -\sqrt{3}$

16. sec 180° $\left(\frac{1}{(-1)}\right)$ $= -1$

17. csc 180° $\left(\frac{1}{0}\right)$ undefined

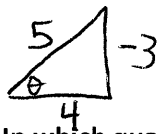
18. csc $\frac{11\pi}{6}$ $\left(\frac{1}{(-1/2)}\right)$ -2

19. tan $\frac{2\pi}{3}$ $\left(\frac{\frac{\sqrt{3}}{2}}{-\frac{1}{2}}\right)$ $-\sqrt{3}$

20. sec $\frac{5\pi}{6}$ $\left(\frac{1}{-\sqrt{3}/2}\right)$ $\frac{-2\sqrt{3}}{3}$

21. csc $\frac{5\pi}{4} = \frac{1}{(-\sqrt{2}/2)}$ $-\sqrt{2}$

22. Find the value of $\cos\theta$ if $\sin\theta$ is equal to $\frac{-3}{5}$ and lies in quadrant IV



$\cos\theta = 4/5$

In which quadrant(s) will the following trigonometric functions be positive?

23. sine I, II

24. tangent I, III

25. cosine I, IV

Convert each measurement to radians (in terms of π).

26. 185° $\frac{\pi}{180} = \boxed{\frac{37\pi}{36}}$

27. 475° $\frac{95\pi}{36}$