Answer Key

Trigonometric Functions and Real Numbers

Find the sine and cosine of each angle.

1. $90°$ **1; 0**

2. $135°$ $\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}$

3. $270°$ **−1; 0**

4. $\frac{\pi}{6}$ $\frac{1}{2}, \frac{\sqrt{3}}{2}$

5. $\frac{3\pi}{4}$ $\frac{\sqrt{2}}{2}; -\frac{\sqrt{2}}{2}$

6. $\frac{5\pi}{6}$ $\frac{1}{2}; -\frac{\sqrt{3}}{2}$

Find the coordinate of the terminal point for each angle.

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

8. $\frac{\pi}{2}$ **(0, 1)**

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

10. $315°$ $\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

11. $210°$ $\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

12. $240°$ $\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

Solve.

13. What is the sin θ if cos $\theta = \frac{-6}{10}$ and θ is in Quadrant II? $\frac{8}{10}$

14. What is the cos θ if the sin $\theta = \frac{-16}{20}$ and θ is in Quadrant III?

$-\frac{12}{20}$

What is the tangent of each angle?

15. $\frac{11\pi}{6}$ $-\frac{\sqrt{3}}{3}$

16. $\frac{\pi}{4}$ **1**

17. $\frac{5\pi}{3}$ $-\sqrt{3}$

18. $-750°$ $-\frac{\sqrt{3}}{3}$

19. $30°$ $\frac{\sqrt{3}}{3}$

20. $135°$ **−1**

Find the secant, cosecant, and cotangent for each angle.

21. $\frac{\pi}{4}$ $\sqrt{2}; \sqrt{2}; 1$

22. $\frac{\pi}{6}$ $\frac{2\sqrt{3}}{3}; 2; \sqrt{3}$

23. $\frac{3\pi}{4}$ $-\sqrt{2}; \sqrt{2}; -1$

24. $330°$ $\frac{2\sqrt{3}}{3}; -2; -\sqrt{3}$

25. $120°$ $-2; \frac{2\sqrt{3}}{3}; -\frac{\sqrt{3}}{3}$

26. $240°$ $-2; -\frac{2\sqrt{3}}{3}; \frac{\sqrt{3}}{3}$

27. Alejandro said the cotangent of $180°$ is 0. Is he correct? Explain.

Alejandro is incorrect. Sample answer: The cot 180° is undefined. cot 180° $= \frac{\cos 180°}{\sin 180°} = -\frac{1}{0}$.

28. Alex is standing at the 2 o'clock position on a circle in the center of a soccer field. He passes the ball to a player who is located at the 10 o'clock position. The radii to the positions of the two players forms a central angle of the circle. What are the degree and radian measures of the angle? **120°; $\frac{2\pi}{3}$**