

PRE-CALCULUS
TRIGONOMETRY REVIEW

NAME: _____
DATE: _____ **PER:** _____

Learning Targets

- A. Identify fundamental concepts of unit circle trigonometry.
1. Identify quadrants in which the terminal side of an angle in standard position lies. #19
 2. Determine reference angles for angles given in radians or degrees. #'s 7, 8, 9, 10
 3. Identify angles coterminal to angles in standard position given in radians or degrees. #'s 11, 12
- B. Convert angle measure from degree to radians and vice versa. #'s 1, 2, 3, 4, 5, 6
- C. Apply fundamental concepts of unit circle trigonometry to
- evaluate the 6 trigonometric ratios for a given angle measured in degrees or radians. #'s 20-37
- D. Apply fundamental concepts of unit circle trigonometry to
- evaluate the 6 trigonometric ratios for a quadrantal angle in standard position when given an ordered pair on its terminal side. #'s 17, 18
- E. Apply fundamental concepts of unit circle trigonometry to
- evaluate the 6 trigonometric ratios for a non-quadrantal angle in standard position when given an ordered pair on its terminal side #'s 14, 15
 - evaluate the remaining 5 trigonometric ratios given an initial ratio and evidence of the quadrant in which the terminal side lies. #'s 13, 16

NO CALCULATORS!!!

Convert to radians.

1. $240^\circ =$

2. $-100^\circ =$

3. $215^\circ =$

Convert to degrees.

4. $\frac{11\pi}{6} =$

5. $\frac{13\pi}{4} =$

6. $-\frac{7\pi}{12} =$

State the reference angle for each.

7. 330°

8. $\frac{7\pi}{9}$

9. -104°

10. $\frac{21\pi}{4}$

Find one positive and one negative angle coterminal with each.

11. -400°

12. $\frac{13\pi}{6}$

13. Find the remaining five trig functions if $\cos \theta = \frac{5}{13}$ and the terminal side of θ is NOT in the first quadrant.

$$\cos \theta = \underline{\hspace{2cm}} \quad \sec \theta = \underline{\hspace{2cm}}$$

$$\sin \theta = \underline{\hspace{2cm}} \quad \csc \theta = \underline{\hspace{2cm}}$$

$$\tan \theta = \underline{\hspace{2cm}} \quad \cot \theta = \underline{\hspace{2cm}}$$

14. The terminal side of an angle in standard position contains the point $(-24, -7)$. Find the value of all six trig functions.

$$\cos \theta = \underline{\hspace{2cm}} \quad \sec \theta = \underline{\hspace{2cm}}$$

$$\sin \theta = \underline{\hspace{2cm}} \quad \csc \theta = \underline{\hspace{2cm}}$$

$$\tan \theta = \underline{\hspace{2cm}} \quad \cot \theta = \underline{\hspace{2cm}}$$

15. The terminal side of an angle in standard position contains the point $(2, -3)$. Find the value of all six trig functions.

$$\cos \theta = \underline{\hspace{2cm}} \quad \sec \theta = \underline{\hspace{2cm}}$$

$$\sin \theta = \underline{\hspace{2cm}} \quad \csc \theta = \underline{\hspace{2cm}}$$

$$\tan \theta = \underline{\hspace{2cm}} \quad \cot \theta = \underline{\hspace{2cm}}$$

16. Find the remaining five trig functions if $\csc \theta = -\frac{4}{3}$ and the terminal side of θ is not in the fourth quadrant.

$$\cos \theta = \underline{\hspace{2cm}} \quad \sec \theta = \underline{\hspace{2cm}}$$

$$\sin \theta = \underline{\hspace{2cm}} \quad \csc \theta = \underline{\hspace{2cm}}$$

$$\tan \theta = \underline{\hspace{2cm}} \quad \cot \theta = \underline{\hspace{2cm}}$$

17. The terminal side of an angle in standard position contains the point $(-3, 0)$. Find the value of all six trig functions.

$$\cos \theta = \underline{\hspace{2cm}} \quad \sec \theta = \underline{\hspace{2cm}}$$

$$\sin \theta = \underline{\hspace{2cm}} \quad \csc \theta = \underline{\hspace{2cm}}$$

$$\tan \theta = \underline{\hspace{2cm}} \quad \cot \theta = \underline{\hspace{2cm}}$$

18. The terminal side of an angle in standard position contains the point $(0, 5)$. Find the value of all six trig functions.

$$\cos \theta = \underline{\hspace{2cm}} \quad \sec \theta = \underline{\hspace{2cm}}$$

$$\sin \theta = \underline{\hspace{2cm}} \quad \csc \theta = \underline{\hspace{2cm}}$$

$$\tan \theta = \underline{\hspace{2cm}} \quad \cot \theta = \underline{\hspace{2cm}}$$

19. Determine which quadrant contains the terminal side of θ if...

a. $\sec \theta > 0$ and $\sin \theta < 0$

b. $\cos \theta < 0$ and $\tan \theta < 0$

c. $\sin \theta < 0$ and $\cot \theta < 0$

d. $\cot \theta > 0$ and $\csc \theta > 0$

e. $\tan \theta > 0$ and $\sec \theta < 0$

Evaluate the following:

20. $\sin\left(\frac{\pi}{6}\right)$

21. $\tan(-150^\circ)$

22. $\csc\left(-\frac{\pi}{4}\right)$

23. $\cos(210^\circ)$

24. $\cot\left(\frac{7\pi}{6}\right)$

25. $\sin(-405^\circ)$

26. $\sec\left(\frac{11\pi}{3}\right)$

27. $\cot(1080^\circ)$

28. $\tan(5\pi)$

29. $\csc(-270^\circ)$

30. $\cos\left(-\frac{4\pi}{3}\right)$

31. $\sec(60^\circ)$

32. Find the product of $\cos(150^\circ)$ and $\sin(135^\circ)$.

33. Find the sum of $\tan(45^\circ)$ and $\sin(210^\circ)$.

True or False

_____ 34. $\cos(315^\circ)$ is equivalent to $\sin(135^\circ)$

_____ 35. $\csc(120^\circ)$ is equivalent to $\cos(240^\circ)$

_____ 36. $\tan\left(\frac{\pi}{2}\right)$ is equivalent to $\cot\left(\frac{3\pi}{2}\right)$

_____ 37. $\tan(135^\circ)$ is equivalent to $\cos(\pi)$

Answers: 1. $\frac{4\pi}{3}$ 2. $-\frac{5\pi}{9}$ 3. $\frac{43\pi}{36}$ 4. 330° 5. 585° 6. -105° 7. 30°

8. $\frac{2\pi}{9}$ 9. 76° 10. $\frac{\pi}{4}$ 11. $-40^\circ, 320^\circ$ 12. $\frac{\pi}{6}, -\frac{11\pi}{6}$

13. $\cos\theta = \frac{5}{13}, \sin\theta = -\frac{12}{13}, \tan\theta = -\frac{12}{5}, \sec\theta = \frac{13}{5}, \csc\theta = -\frac{13}{12}, \cot\theta = -\frac{5}{12}$

14. $\cos\theta = -\frac{24}{25}, \sin\theta = -\frac{7}{25}, \tan\theta = \frac{7}{24}, \sec\theta = -\frac{25}{24}, \csc\theta = -\frac{25}{7}, \cot\theta = \frac{24}{7}$

15. $\cos\theta = \frac{2}{\sqrt{13}}, \sin\theta = -\frac{3}{\sqrt{13}}, \tan\theta = -\frac{3}{2}, \sec\theta = \frac{\sqrt{13}}{2}, \csc\theta = -\frac{\sqrt{13}}{3}, \cot\theta = -\frac{2}{3}$

16. $\cos\theta = -\frac{\sqrt{7}}{4}, \sin\theta = -\frac{3}{4}, \tan\theta = \frac{3}{\sqrt{7}}, \sec\theta = -\frac{4}{\sqrt{7}}, \csc\theta = -\frac{4}{3}, \cot\theta = \frac{\sqrt{7}}{3}$

17. $\cos\theta = -1, \sin\theta = 0, \tan\theta = 0, \sec\theta = -1, \csc\theta = UD, \cot\theta = UD$

18. $\cos\theta = 0, \sin\theta = 1, \tan\theta = UD, \sec\theta = UD, \csc\theta = 1, \cot\theta = 0$ 19. a) IV b) II c) IV d) I e) III

20. $\frac{1}{2}$ 21. $\frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3}$ 22. $-\sqrt{2}$ 23. $-\frac{\sqrt{3}}{2}$ 24. $\sqrt{3}$ 25. $-\frac{\sqrt{2}}{2}$ 26. 2

27. UD 28. 0 29. 1 30. $-\frac{1}{2}$ 31. 2 32. $-\frac{\sqrt{6}}{4}$ 33. $\frac{1}{2}$

34. T 35. F 36. F 37. T