Advanced Math **Quiz 5.3 Review** **Name:**

☆ ***Draw a unit circle and label each of the quadrantal angles in degrees <u>and</u> in radians. Label the coordinate points at the quadrantal angles.***

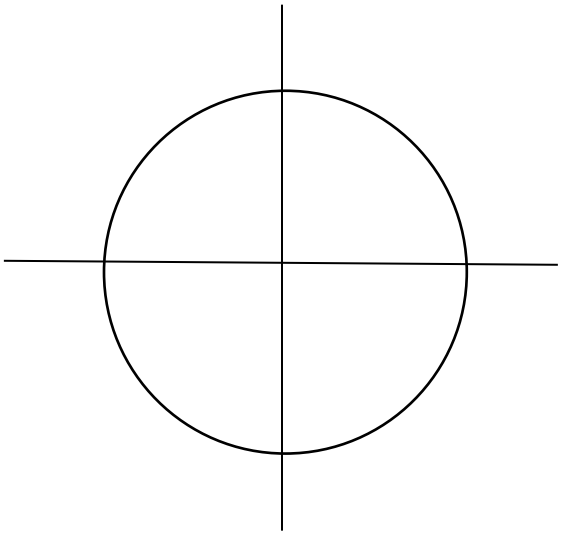
$0°$ = _____ radians

$90°$ = _____ radians

$180°$ = _____ radians

$270°$ = _____ radians

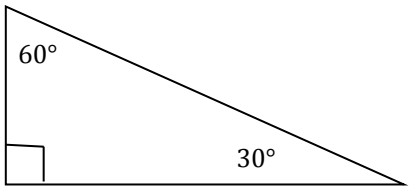
$360°$ = _____ radians



☆ **Cosine is the _____ coordinate** **Sine is the _____ coordinate** **Tangent is _____**

☆ **Secant is _____** **Cosecant is _____** **Cotangent is _____**

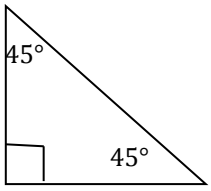
☆ **Label the sides of this $30° - 60° - 90°$ triangle and find the exact values of the trig functions at the right.**



$\sin 30° =$	$\csc 30° =$
$\cos 30° =$	$\sec 30° =$
$\tan 30° =$	$\cot 30° =$

$\sin 60° =$	$\csc 60° =$
$\cos 60° =$	$\sec 60° =$
$\tan 60° =$	$\cot 60° =$

☆ **Label the sides of this $45° - 45° - 90°$ triangle and find the exact values of the trig functions at the right..**



$\sin 45° =$	$\csc 45° =$
$\cos 45° =$	$\sec 45° =$
$\tan 45° =$	$\cot 45° =$

Using the unit circle, find the exact value for the following without a calculator. If there is no answer possible, write "undefined."

1. $\sin 90°$

1._____

2. $\csc 90°$

2._____

3. $\cos 180°$

3._____

4. $\sec 180°$

4._____

5. $\tan 270°$

5._____

6. $\cot 270°$

6._____

7. $\sin 180°$

7._____

8. $\cot 180°$

8._____

9. $\tan 0°$

9._____

10. $\cos 90°$

10._____

11. $\sin 270°$

11._____

12. $\csc 360°$

12._____

13. $\sec \pi$

13._____

14. $\cos \frac{3\pi}{2}$

14._____

15. $\cot \frac{\pi}{2}$

15._____

16. $\cos \pi$

16._____

17. $\tan 2\pi$

17._____

18. $\csc \frac{3\pi}{2}$

18._____

19. $\sin \frac{3\pi}{2}$

19._____

20. $\tan \frac{\pi}{2}$

20._____

***Draw* the angle in standard position. Then find the reference angle.**

21. $124°$ Ref. Angle:_____

22. $208°$ Ref. Angle:_____

23. $330°$ Ref. Angle:_____

24. $1240°$ Ref. Angle:_____

25. $1074°$ Ref. Angle:_____

26. $915°$ Ref. Angle:_____

27. $-130°$ Ref. Angle:_____

28. $-195°$ Ref. Angle:_____

Steps to find exact values of trigonometry values.

1. Draw the angle in standard form (draw the terminal side of the angle as the HYPOTENUSE to a right triangle).
2. Find the reference angle and place it on the picture.
3. Draw a right triangle to the x-axis and fill in all the angles.
4. Label all the sides – be sure to put negative signs in front of the values of the sides that go to the left or down. They hypotenuse is **always** POSITIVE.
5. Evaluate.

Use the reference angle to find the EXACT VALUE of each trigonometric function. Do NOT use a calculator!

29. $\sin 135°$

30. $\cos 120°$

31. $\tan 210°$

29._____

30._____

31._____

Use the reference angle to find the <u>EXACT</u> <u>VALUE</u> of each trigonometric function. Do NOT use a calculator!

32. $\sin 240°$

32._____

33. $\tan 300°$

33._____

34. $\cos 300°$

34._____

35. $\csc 60°$

35._____

36. $\sin 120°$

36._____

37. $\tan 315°$

37._____

38. $\sec 120°$

38._____

39. $\cot 225°$

39._____

40. $\tan 150°$

40._____

41. $\tan 240°$

41._____

42. $\cos 225°$

42._____

43. $\cos 210°$

43._____

Without a calculator, find the following exact values. Use the answers from #29-43.

44. $\sec 120° - \cos 120°$

44._____

45. $\tan 315° + \sin 240° \cos 120°$

45._____

46. $\tan 315° + \cos 300° \sec 120°$

46._____

47. $\cot 225° - \tan 315°$

47._____

48. $\cos 225° \sin 135°$

48._____

49. $\sin 120° \tan 150°$

49._____

Find the exact value of each expression.

50. $\sin\theta = -\frac{\sqrt{3}}{2}, \quad 270° < \theta < 360°;$ find $\cot\theta$

51. $\cos\theta = -\frac{\sqrt{2}}{2}, \quad 180° < \theta < 270°;$ find $\csc\theta$

52. $\tan\theta = -1, \quad 90° < \theta < 180°;$ find $\sec\theta$

53. $\csc\theta = -2, \quad 180° < \theta < 270°;$ find $\tan\theta$

54. $\sin\theta = -\frac{1}{2}$ and $\cos\theta = \frac{\sqrt{3}}{2}$; find $\cot\theta$

55. $\cos\theta = -\frac{\sqrt{3}}{2}$ and $\sin\theta = -\frac{1}{2}$; find $\tan\theta$

56. $\csc\theta = 2$ and $\cot\theta = -\sqrt{3}$; find $\cos\theta$

57. $\sec\theta = -\sqrt{2}$ and $\sin\theta = -\frac{\sqrt{2}}{2}$; find $\tan\theta$

1. 1

2. 1

3. -1

4. -1

5. undefined

6. 0

7. 0

8. undefined

9. 0

10. 0

11. -1

12. undefined

13. -1

14. 0

15. 0

16. -1

17. 0

18. -1

19. -1

20. undefined

21. $56°$

22. $28°$

23. $30°$

24. $20°$

25. $6°$

26. $15°$

27. $50°$

28. $15°$

29. $\frac{\sqrt{2}}{2}$

30. $-\frac{1}{2}$

31. $\frac{\sqrt{3}}{3}$

32. $-\frac{\sqrt{3}}{2}$

33. $-\sqrt{3}$

34. $\frac{1}{2}$

35. $\frac{2\sqrt{3}}{3}$

36. $\frac{\sqrt{3}}{2}$

37. -1

38. -2

39. 1

40. $-\frac{\sqrt{3}}{3}$

41. $\sqrt{3}$

42. $-\frac{\sqrt{2}}{2}$

43. $-\frac{\sqrt{3}}{2}$

44. $-1\frac{1}{2}$

45. $\frac{-4+\sqrt{3}}{4}$

46. -2

47. 2

48. $-\frac{1}{2}$

49. $-\frac{1}{2}$

50. $-\frac{\sqrt{3}}{3}$

51. $-\sqrt{2}$

52. $-\sqrt{2}$

53. $\frac{\sqrt{3}}{3}$

54. $-\sqrt{3}$

55. $\frac{\sqrt{3}}{3}$

56. $-\frac{\sqrt{3}}{2}$

57. 1