Name: _____ Per: _____ Date: _____
Serafino ▪ Precalculus

3–R Unit 3 Review Trig in Degrees/Radians – Review Part 1

All answers on a non–calculator section should be simplified, rationalized and exact; improper fractions, π, radicals… no decimals.) You probably want to do all work on a separate paper… there's not much room here.

1. Express the following in radians:

   a. 1/3 of a rotation b. 1/14 of a rotation c. 4 rotations 5. 2.7 rotations

2. Write the angle in each quadrant that would have the following reference angle:

   a. $\pi/12$ b. $\pi/25$ c. $2\pi/9$

3. In radians, what are complement and supplement of….

   a. $\pi/6$ b. $\pi/7$ c. $3\pi/8$ c. $2\pi/5$

4. In radians, name the coterminal angle between 0 and 2π. Then name the quadrant and reference angle.

   a. $11\pi/3$ b. $17\pi/6$ c. $37\pi/5$ d. $-20\pi/9$

5. Name the quadrant. Then convert to degrees and name the reference angle in degrees and radians. .

   a. $17\pi/6$ b. $-9\pi/5$ c. $4\pi/5$ d. $3\pi/8$

   e. $11\pi/2$ f. $-\pi/12$ g. 2 h. 2.4

6. Convert to radians. Then name the quadrant, and name the reference angle in degrees and radians.

   a. 220° b. 140° c. 350° 45'

7. Convert to degrees. Then name the quadrant. (Don't find the reference angle)

   a. $\pi/10$ b) $3\pi/8$ c) -4 d) $21\pi/12$

8. Give exact values for the following trigonometric functions.

   a) $\sin(5\pi/6)$ b) $\tan(7\pi/4)$ c) $\sec(3\pi/2)$ d) $\sin(17\pi/6)$ e) $\cot(17\pi/6)$

9. Evaluate the expression:

   a) $3\cos(2x - \pi)$ when $x = \pi/8$

   b) $5\csc(\frac{1}{2}x)$ when $x = 7\pi$

   c) $\dfrac{\cot(5\pi/6)\cdot \sec(-\pi/4)}{\csc\left(\frac{3\pi}{4}\right)^{-1}}$

   d) $\sin\frac{\pi}{4} - \cot\frac{\pi}{3}$

   e) $\sin 7\pi/6\,(\csc \pi/6 + \tan 5\pi/3)^2$

   f) $\tan 4\,\pi/3\,(\cot \pi/6 - \sec 5\pi/4)^2$

10. Name angles $0 \leq \theta < 2\pi$ for which the following is true:

a. $\csc\theta = -2$ b. $\cot\theta = 1$ c. $\cos\theta = -\frac{\sqrt{2}}{2}$ d. $\sec\theta = und.$

11. Name all angles θ, in degrees AND radians, for which the following is true:

a. $\tan\theta = \sqrt{3}$ b. $\sin\theta = 0$ c. $\sec\theta = \frac{2\sqrt{3}}{3}$ d. $\csc\theta = 1$

12. Does the point lie on the unit circle? Why or why not?

a) $(1/\sqrt{5}, -2/\sqrt{5})$ b) $(3/3\sqrt{5}, -6/3\sqrt{5})$

13. At what point does the given angle cross the unit circle? Write answer as a ordered pair.

a) 225° b) 120°

14. Calculate the length of the minor arc and the sector area containing these points on the unit circle:

a. $(\sqrt{3}/2, ½)$ and $(-\sqrt{2}/2, \sqrt{2}/2)$ b. $(0, -1)$ and $(1/2, -\sqrt{3}/2)$ c. $(-1, 0)$ and $(\sqrt{3}/2, ½)$

Name: _____ Per: _____
Serafino ▪ Precalculus

3–R Chapter 3 Test Review – Part 2

15. Approximate the following radians in degrees in degrees, minutes & seconds.

a. $9\pi/14$ b. $-\pi/15$ c. $5/2$

16. Find θ for on the interval $0 \le \theta \le 2\pi$

a) $\cos\theta = 0.6729$; b) $\csc\theta = -1.140$ c) $\sin\theta = -0.1234$

d) $|\cot\theta| = 0.5678$ e) $\sin\theta = 3/2$ f) Contains $(-11, 3)$

17. The minute hand on a large clock is 15.4 inches long. It travels from 12:45 to 1:20.

a. How far does the tip of the minute hand travel?

b. What is the area of the sector formed?

18. A lawn sprinkler is located at the corner of a yard. The sprinkler is set to rotate through 85° and the area the sprinkler covers in the lawn is 9π ft^2.

a. Find the distance the sprinkler can project.

b. How far should the water project if the area the lawn that gets water needs to be doubled?

19. You're in France and see the Eiffel tower in the distance. A friendly Parisian local tells you are 15.5 blocks away. If each block is approximately 400 feet, and the Eiffel tower subtends an angle of vision that is about the width of your hand, (about 10°), approximately how tall is the Eiffel Tower?

Name: _____ Per: _____ Date: _____
Serafino ▪ Precalculus

3–R Unit 3 Review Trig in Degrees/Radians – KEY

All answers on a non–calculator section should be simplified, rationalized and exact; improper fractions, π, radicals… no decimals.) You probably want to do all work on a separate paper… there's not much room here.

20. Express the following in radians:

a. 1/3 of a rotation $\frac{2\pi}{3}$ b. 1/14 of a rotation $\frac{\pi}{7}$ c. 4 rotations 8π d. 2.7 rotations $\frac{27\pi}{5}$

21. Write the angle in each quadrant that would have the following reference angle:

a. π/12: 11π /12, 13π/12, 23π/12 b. π/25: 24π/25, 26π/25, 49π/25 c. 2π/9: 7π/9, 11π/9, 16π/9

22. In radians, what are complement and supplement of….

b. π/6 C: π/3 S: 5π/6 b. π/7 C: 5π/14 S: 6π/7 c. 3π/8 C: π/8 S: 5π/8 c. 2π/5 C: π/10 S: 3π/7

23. In radians, name the coterminal angle between 0 and 2π. Then name the quadrant and reference angle.

b. 11π/3 b. 17π /6 c. 37π /5 d. –20π/ 9

24. Name the quadrant. Then convert to degrees and name the reference angle in degrees and radians. .

b. 17π/6 b. –9π/5 c. 4π/5 d. 3π/8

f. 11π/2 f. –π/12 g. 2 h. 2.4

25. Convert to radians. Then name the quadrant, and name the reference angle in degrees and radians.

b. 220° b. 140° c. 350° 45'

26. Convert to degrees. Then name the quadrant. (Don't find the reference angle)

a. $\pi/10$ b) $3\pi/8$ c) -4 d) $21\pi/12$

27. Give exact values for the following trigonometric functions.

a) $\sin(5\pi/6)$ b) $\tan(7\pi/4)$ c) $\sec(3\pi/2)$ d) $\sin(17\pi/6)$ e) $\cot(17\pi/6)$

28. Evaluate the expression:

a) $3\cos(2x - \pi)$ when $x = \pi/8$

b) $5\csc(\frac{1}{2}x)$ when $x = 7\pi$

c) $\dfrac{\cot(5\pi/6)\cdot \sec(-\pi/4)}{\csc\left(\frac{3\pi}{4}\right)^{-1}}$

d) $\sin\frac{\pi}{4} - \cot\frac{\pi}{3}$

e) $\sin 7\pi/6\ (\csc \pi/6 + \tan 5\pi/3)^2$

f) $\tan 4\ \pi/3\ (\cot \pi/6 - \sec 5\pi/4)^2$

29. Name angles $0 \le \theta < 2\pi$ for which the following is true:

b. $\csc\theta = -2$ b. $\cot\theta = 1$ c. $\cos\theta = -\frac{\sqrt{2}}{2}$ d. $\sec\theta = und.$

30. Name all angles θ, in degrees AND radians, for which the following is true:

b. $\tan\theta = \sqrt{3}$ b. $\sin\theta = 0$ c. $\sec\theta = \frac{2\sqrt{3}}{3}$ d. $\csc\theta = 1$

31. Does the point lie on the unit circle? Why or why not?

a) (1/√5, –2/√5) b) (3/3√5, –6/3√5)

32. At what point does the given angle cross the unit circle? Write answer as a ordered pair.

a) 225° b) 120°

33. Calculate the length of the minor arc and the sector area containing these points on the unit circle:

b. (√3/2, ½) and (–√2/2, √2/2) b. (0, –1) and (1/2, –√3/2) c. (–1, 0) and (√3/2, ½)

Name: _____ Per: _____
Serafino ▪ Precalculus

3–R Chapter 3 Test Review – Part 2

34. Approximate the following radians in degrees in degrees, minutes & seconds.

b. 9π/14 b. – π/15 c. 5/2

35. Find θ for on the interval $0 \leq \theta \leq 2\pi$

a) $\cos\theta = 0.6729$; b) $\csc\theta = -1.140$ c) $\sin\theta = -0.1234$

d) $|\cot\theta| = 0.5678$ e) $\sin\theta = 3/2$ f) Contains (–11, 3)

36. The minute hand on a large clock is 15.4 inches long. It travels from 12:45 to 1:20.

c. How far does the tip of the minute hand travel?

d. What is the area of the sector formed?

37. A lawn sprinkler is located at the corner of a yard. The sprinkler is set to rotate through 85° and the area the sprinkler covers in the lawn is 9π ft^2.

c. Find the distance the sprinkler can project.

d. How far should the water project if the area the lawn that gets water needs to be doubled?

38. You're in France and see the Eiffel tower in the distance. A friendly Parisian local tells you are 15.5 blocks away. If each block is approximately 400 feet, and the Eiffel tower subtends an angle of vision that is about the width of your hand, (about 10°), approximately how tall is the Eiffel Tower?