Precalculus Name_____

4.1-4.3 Test Review Period_____Date_____

a) Sketch the angle in standard position, b) determine the quadrant in which the angle lies, and c) determine two coterminal angles (one positive and one negative).

1. $\frac{15\pi}{11}$	2. $-110°$

Convert the degree measure to radian measure. Leave answer in terms of π.

3. $450°$	4. $190°$
5. $-16°$	6. $-112°$

Convert the radian measure to degree measure. Round to three decimal places, if necessary.

7. $\frac{3\pi}{10}$	8. $-\frac{11\pi}{6}$
9. -3.5	10. 5.7

Convert the angle measure to D°M′S" form.

11. $198.4°$	12. $-5.96°$

Convert to decimal degrees form.

13. $10°13'30"$	14. $122°4'15"$

15. Find the radius of a circle with a central angle of 138° and an intercepted arc length of 43 inches.

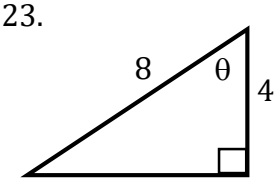
16. A water sprinkler sprays water on a lawn over a distance of 25 feet and rotates through and angle of 130°. Find the area of the lawn watered by the sprinkler.

Use a calculator to evaluate the trigonometric function. Round your answer to four decimal places. (Be sure the calculator is in the correct mode.)

17. $\sec\frac{12\pi}{5}$	18. $\cos 78°11'58"$
19. $\sec 79.3°$	20. $\tan 33$
21. $\sin\left(-\frac{\pi}{9}\right)$	22. $\cot 15°14'$

Find the exact value of the six trigonometric functions of angle θ.

23.



Use the given function value to find the exact value of the other five trigonometric functions.

24. $\sin\theta = \frac{1}{3}$	25. $\csc\theta = 5$

26. A train travels 3.5 kilometers on a straight track with a grade of 1.2°. What is the vertical rise?

27. A guy wire runs from the ground to the top of a 25-foot telephone pole. The angle formed between the wire and the ground is 52°. How far from the base of the pole is the guy wire anchored to the ground? Assume the pole is perpendicular to the ground.

Find the exact value of the following functions. Use the unit circle.

28. $\sin\frac{7\pi}{6}$	29. $\cos\left(-\frac{\pi}{3}\right)$	30. $\tan(-\pi)$
31. $\cos(-180^{\circ})$	32. $\cot\frac{3\pi}{2}$	33. $csc(-420°)$

34. In what quadrants will tangent be a positive value? A negative value?

35. If $\cos\theta = -\frac{1}{2}$ and θ is in Q II, what is θ in radians?

36. If $\sin\theta = -\frac{\sqrt{3}}{2}$ and θ is in Q IV, what is θ in degrees?

37. In which quadrant would θ be located if:

a) $\tan\theta > 0$ and $\cos\theta < 0$?

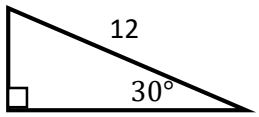
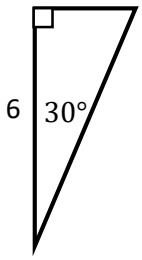
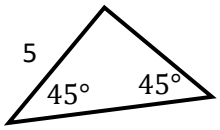
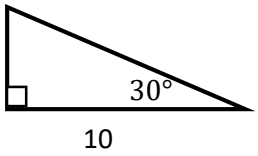
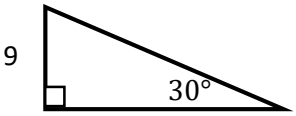
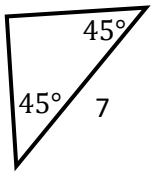
b) $\sin\theta < 0$ and $\cos\theta < 0$?

c) $\sin\theta > 0$ and $\tan\theta > 0$?

Find the complement and supplement of each angle if possible.

38. $\frac{\pi}{12}$	39. $\frac{\pi}{4}$

Using your special triangle patterns, find the exact value of the missing sides.

40. 	41. 	42. 
43. 	44. 	45.