

6.3

Name _____ Date _____ Period _____

Converting Degrees and Radians, Arc length, and Sector Area

Convert from degrees to radians. Leave answer in terms of π and use the value of π found on a calculator to round answer to four decimal places. Show work using the correct conversion ratios.

1. 60°

2. 90°

3. 71.72°

4. 11.83°

5. -240°

6. 570°

7. 315°

8. -190.24°

Convert the radian measure to degree measure. Use the value of π found on the calculator and round answers to two decimal places. Show work using the correct conversion ratio.

9. $\frac{\pi}{6}$

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

11. $\frac{7\pi}{3}$

12. $\frac{20\pi}{9}$

13. $-\frac{13\pi}{20}$

14. 2

15. 1.3

16. $\frac{17\pi}{12}$

Convert each degree measure into radians and each radian measure into degrees. Leave radians in terms of π . Round the degrees to the nearest hundredth.

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

18. 410°

19. $\frac{11\pi}{2}$

20. 420°

21. $-\frac{2\pi}{3}$

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

23. -1020°

24. 210°

Use the arc length formula and the given information to find the arc length. If you are given radians, write the answer in terms of π and use the π button to round answers to the nearest tenth. If you are given degrees, round the answer to the nearest tenth of a degree. Show work using the formula. Remember, leave work and answer in the units it begins with.

25. $r = 2 \text{ m}, \theta = 60^\circ$

26. $r = 4.5 \text{ ft.}, \theta = 135^\circ$

27. $r = 7 \text{ km}, \theta = \frac{2\pi}{3}$

28. $r = 20 \text{ yd.}, \theta = \frac{5\pi}{4}$

29. $r = 4 \text{ in.}, \theta = 300^\circ$

30. $r = 12 \text{ mi.}, \theta = \frac{\pi}{8}$

Use the arc length formula and the given information to find the indicated measure. Round answers to the nearest tenth if necessary. Show work using the formula. Remember, leave work and answer in the units it begins with.

31. $r = 2$ in., $s = 50$; find θ in (leave answer in degrees)

32. $s = 1.5$ ft., $\theta = \frac{\pi}{4}$ rad; find r

33. $r = 1$ cm, $s = 4$ cm; find θ (leave answer in radians)

34. $s = 2.5$ cm, $\theta = 315^\circ$; find r

35. $s = 4$ in, $r = 7$ in; find θ (leave answer in radians)

36. $s = 3$ m, $\theta = \frac{5\pi}{6}$; find r

Use the sector area formula and the given information to find the sector area. If you are given radians, write the answer in terms of π and use the π button to round answers to the nearest tenth. If you are given degrees, round the answer to the nearest tenth of a degree. Show work using the formula. Remember, leave work and answer in the units it begins with.

37. $r = 6$ ft., $\alpha = 30^\circ$

38. $r = 12$ m, $\alpha = 3\pi$

39. $r = 2.1 \text{ km}$, $\alpha = 135^\circ$

40. $r = 10 \text{ cm}$, $\alpha = \frac{5\pi}{12}$

41. $r = 2.4 \text{ ft.}$, $\alpha = \frac{\pi}{9}$

42. $r = 15 \text{ yd.}$, $\alpha = 90^\circ$

Use the sector area formula and the given information to find the indicated measure. Round answers to the nearest tenth if necessary. Show work using the formula. Remember, leave work and answer in the units it begins with.

43. $\alpha = \frac{4\pi}{3}$, $A = 20 \text{ sq. km}$; find r

44. $\alpha = 50^\circ$, $A = 20 \text{ sq. in.}$; find r

45. $r = 2 \text{ ft.}$, $A = 48 \text{ sq. ft.}$; find α (leave answer in radians)

46. $r = 6 \text{ m}$, $A = 62.25 \text{ sq. ft.}$; find α (leave answer in degrees)