Precalculus Worksheet #1   Chapter 5   page 1 _____

Calculators are not to be used on this page of the worksheet.

Convert each radian measure to degree measure.

1. $\dfrac{\pi}{9} =$ _____

2. $\dfrac{4\pi}{3} =$ _____

3. $\dfrac{7\pi}{4} =$ _____

4. $\dfrac{-\pi}{15} =$ _____

Convert each degree measure to radian measure (in terms of π).

5. $90° =$

6. $60° =$

7. $120° =$

8. $-30° =$

Find the exact values of each of the following. The unit circle is included to assist you.

9. $\sin \dfrac{\pi}{4} =$

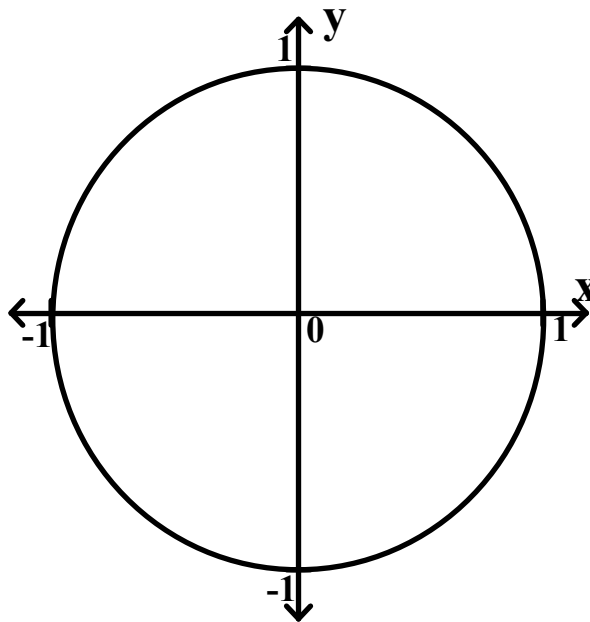10. $\cos \dfrac{2\pi}{3} =$

11. $\tan \dfrac{5\pi}{6} =$

12. $\cot \dfrac{3\pi}{4} =$

13. $\sec \dfrac{4\pi}{3} =$

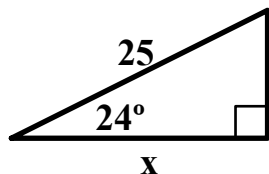14. $\csc \dfrac{-\pi}{3} =$

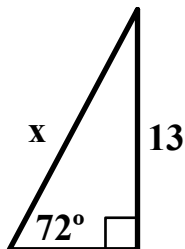# Precalculus Worksheet #1   Chapter 5   page 2

Calculators are needed on this page of the worksheet.

Find the value of x in each of the following diagrams. Express your answers rounded to three significant digits. Show the equation you use to find x in each problem.
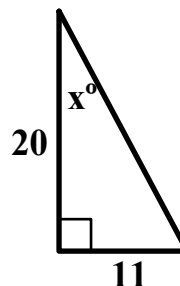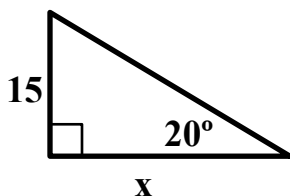
15.   x ≈ _____
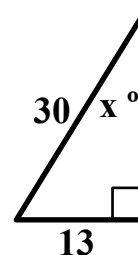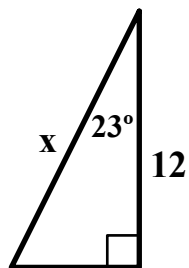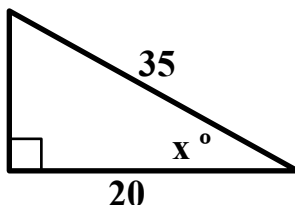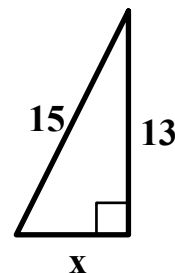
25
24°
x

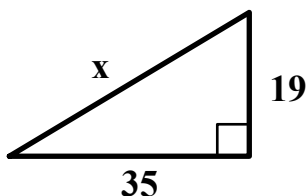**16.**   x ≈ _____

x   13
72°

17.   x ≈ _____

x^o
20
11

18.   x ≈ _____

15
20°
x

19.   x ≈ _____

x
19
35

20.   x ≈ _____

30 x^o
13

21.   x ≈ _____

x 23°
12

22.   x ≈ _____

35
x^o
20

23.   x ≈ _____

15   13
x

Calculators are needed on this page of the worksheet.

Find the value of x in each of the following diagrams. Express your answers rounded to three significant digits. Show the equation you use to find x in each problem.

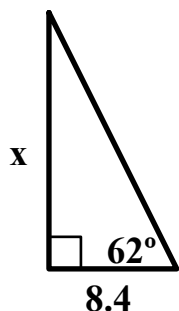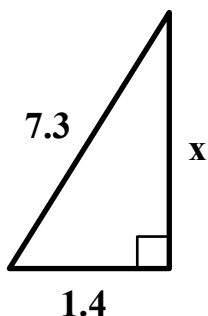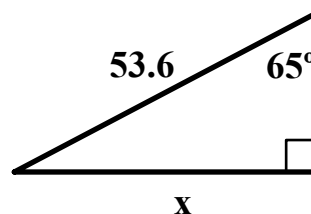**24.**   x ≈ _____   **25.**   x ≈ _____   **26.**   x ≈ _____

Solve each of the following problems. Express solutions rounded to three significant figures.

27. The second hand of a kitchen clock is 4 inches long. How fast is the tip of the second hand moving? Express your answer in inches per second.

28. A bicycle has tires that are 30 inches in diameter. If the bike is moving at 20 miles per hour, then what is the angular speed of the tires? Express your answer in degrees per second.

29. A circular saw blade with a radius of 3.5 inches is turning at 1800 revolutions per minute. How fast are the teeth of the blade moving? Express your answer in feet per second.

Calculators are needed on this page of the worksheet.

30. The latitude of city A is 52º 20' N. The latitude of City B is 15º 25' S. If city A lies due north of city B, then what is the distance between the cities? Assume that the earth is a sphere with a radius of 4000 miles.

31. A ladder that is 12 feet long is leaning against a vertical wall. If the ladder makes an angle of 68 degrees with the level ground, then how far up the wall does the ladder extend?

32. A ladder which is 16 feet long is leaning against a vertical wall. If the ladder makes an angle of 71º with the level ground, then how far is the foot of the ladder from the base of the wall?

33. A vertical post which is 12 feet tall casts a shadow on level ground. If the shadow is 3.5 feet long, then what is the angle of elevation to the sun?