Precalculus Worksheet #4 Chapter 5 page 1 _____

Evaluate each of the following without the use of a calculator. Express your answers in degrees.

1. arcsin(0.5) = _____

2. arccos(1) = _____

3. $\arcsin\left(-\frac{\sqrt{2}}{2}\right)$ = _____

4. $\arccos\left(\frac{\sqrt{3}}{2}\right)$ = _____

5. arctan(-1) = _____

6. $\arctan\left(\sqrt{3}\right)$ = _____

Find the exact value of each of the following without the use of a calculator.

7. sin(arcsin(0.2)) = _____

8. sin(arccos(0.8)) = _____

9. cot(arctan(0.25)) = _____

10. tan(arcsin(0.6)) = _____

11. cos(arcsin(12/13)) = _____

12. cos(arctan(1)) = _____

13. cos(arctan(-0.5)) = _____

14. tan(arcsin(-0.6)) = _____

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Find each of the following in terms of x.

15. $\sin(\arccos(x)) =$ _____

16. $\cos(\arctan(x)) =$ _____

17. $\tan(\arccos(x/3)) =$ _____

18. $\sin(\arccos(x/2)) =$ _____

Solve each of the following problems. Show your complete solution neatly organized. Round to 3 significant digits where needed.

19. A vertical post that is 20 feet tall casts a shadow on level ground. If the shadow is 10 feet long, then what is the angle of elevation to the sun?

20. A ladder that is 16 feet long is leaning against a vertical wall. If the ladder makes an angle of 70° with the level ground, then how far is the foot of the ladder from the base of the wall?

21. A regular octagon is inscribed in a circle with a 8 inch diameter. What is the length of each side of the octagon.

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Solve each of the following problems. Show your complete solution neatly organized. Round to 3 significant digits where needed.

22. A passenger in an airplane flying at a height of 30,000 feet sees two towns directly to the right of the plane. The angles of depression to the towns are 40° and 65°. How far apart are the towns? (Express your answer in miles.)

23. An airplane is 500 miles south and 250 miles east of an airport. If the pilot wants to fly directly to the airport, then what compass bearing should he take?

24. A simple harmonic motion is described by the function $d = 20\sin(10\pi t)$. What is the frequency? (Assume that the time t is expressed in seconds.)

25. A buoy oscillates in simple harmonic motion as waves go past. At a given time it is noted that the buoy moves a total of 3 feet from its low point to its high point, and that it returns to its high point every 6 seconds. Write an equation that describes the motion of the buoy if it is at its high point when $t = 0$.

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