CH. 9-10 REVIEW WS

Name:_____
Per:_____Date:_____

Directions: Please show all your work for each question.

In #1-5, Find all solution in the equation in the interval [0, 2π).

1.) $\tan^2 3x + \tan 3x = 0$

2.) $\sin 2x - \cos x = 0$

3.) $4\cos^2 \frac{x}{2} - 3 = 0$

4.) $\csc^2 x - \csc x - 2 = 0$

5.) $\sin \frac{x}{2} + \cos x = 0$

6.) Given $\sin\theta = \frac{\sqrt{5}}{5}$ and θ is in the inteval $[\frac{\pi}{2}, \pi]$. Find the exact values of sin2θ, cos2θ, and tan2θ.

7.) Use the half-angle formulas to find the exact value of $\sin 105^0$, $\cos 105^0$, and $\tan 105^0$.

8.) Use the sum formulas to find the exact value of $\sin 255^0$, $\cos 255^0$, and $\tan 255^0$.

In #9-16, draw the angle in standard position then evaluate the function without using a calculator.

9.) $\tan 135^0$

10.) $\sin(-60^0)$

11.) $\cos 210^0$

12.) $\sec(-315^0)$

13.) $\cot \frac{7\pi}{6}$

14.) $\csc \frac{2\pi}{3}$

15.) $\tan \frac{7\pi}{3}$

16.) $\cos\left(-690^0\right)$

In #17-20, use a calculator to evaluate the function. Round the result to four decimal places.

17.) $\sin 18^0$

18.) sec 4

19.) cot (−6.7)

20.) $\csc 242^0$

In #21-22, solve each problem. Round measurements of lengths to the nearest tenth. **Draw a picture, set up an equation, and then solve.**

21.) Nancy shines a light from a window of Rocky Rococco's beachside mansion on a cliff 250 feet above the water level. Nick Danger, 10 feet above the water level, is on a ship off –shore find the angle of elevation of the light is 5^0. Find the slant distance from the ship to Rococco's mansion.

22.) An airplane is directly above a beacon that is 10,000 feet from an airport control tower. The angle of depression from the plane to the base of the control tower is 6^0. How high above the beacon is the plane?

In #23-31, determine the amplitude, period, interval lengths, phase shift, and vertical shift. Then graph the function. Label the axes. Graph 2 full periods.

23.) $y = 5\sin\left(\frac{\pi x}{4}\right)+2$ **24.)** $y = -2\sin\left(2x-\frac{\pi}{2}\right)-2$ **25).** $y = -4\cos x+\pi$

26.) $y = \frac{1}{2}\cos\left(4\pi x-2\pi\right)+3$ **27.)** $y = 2\tan \pi x$ **28.)** $y = \tan\left(\frac{\pi}{2}x+\pi\right)$

29.) $y = 3\sec(\frac{\pi x}{4}-\frac{\pi}{4})+1$ **30.)** $y = \frac{1}{2}\csc(2x)-3$ **31.)** $y = \cot(\pi x)$

32.) Use the substitution $x = 3\tan\theta$ to write the algebraic expression $\sqrt{x^2+9}$ as a trigonometric function of θ where $0<\theta<\frac{\pi}{2}$.

33.) Use the sum or difference formula to evaluate: $\tan\frac{13\pi}{12}$

34.) Simplify: $\cos(2x-y)\cos y - \sin(2x-y)\sin y$

35.) Given $\sin u = \frac{-8}{13}$, find $\cos\frac{u}{2}$. Assume angle u is in the fourth quadrant.

In #36-37. use the sum-to-product formulas to write the sum or difference as a product.

36.) $\cos 120^\circ + \cos 30^\circ$ **37.)** $\sin(x+\frac{\pi}{2})+\sin(x-\frac{\pi}{2})$

38.) Find all solution in the interval [0, 2π): $\cos 2x - \cos 6x = 0$

39.) Verify the identity: $\cos^4 x - \sin^4 x = \cos 2x$

40.) Find all solutions in the interval $[0,2\pi)$: $2\cos^2(2\theta)-1=0$

41.) Find all solutions in the interval $[0,2\pi)$: $2\sin^2\frac{x}{4}-3\cos\frac{x}{4}=0$

42.) Verify the identity: $\tan^2 x\cos^2 x+\cot^2 x\sin^2 x = 1$