Math 1470 Name_____

Test 2 Review

1) Verify that the following is an identity:

$\sin^2 x = \frac{1}{2}(1 - \cos 2x)$

2) Verify that the following is an identity:

$(\sin x + \cos x)^2 = 1 + 2\sin x$

3) Write as a sum (you can verify by graphing):

$y = \sin 3m \cdot \cos m$

4) Verify that the following is an identity:

$\frac{\sin 2t + \sin 4t}{\cos 2t - \cos 4t} = \cot t$

5) Solve the following to four decimal places:

$2\sin x = \cos 2x$

6) Solve the triangle with sides:

$a = 4m, b = 10.2m, c = 9.05m$

7) Solve the triangle with the following:

$\alpha = 122°, \gamma = 18°, b = 12km$

8) Sketch the graph of:

$r = 4$

10) Sketch the graph of:

$\Theta = \frac{\pi}{3}$

11) Write the exponential equation in logarithmic form: $32^{2/5} = 4$

12) Solve the equation for x.

$e^{x^2+8} = e^{6x}$

13) Find the domain, intercepts, and asymptotes of the logarithmic function **and** sketch its graph:

$h(x) = \log_2(x - 4)$

14) Approximate the logarithm using the properties of logarithms, given $\log_b 2 = 0.3562$ and $\log_b 3 = 0.5646$.

$\log_b(3/4)$

15) Condense the expression to the logarithm of a single quantity.
3 ln(7) + 5 ln(z - 9)

16) Convert the angle measure 65° from degrees to radians. Round to three decimal places.

17) Find three values for θ that make the statement true:

$\vartheta = (\frac{1}{2}, \frac{\sqrt{3}}{2})$

18) Find the exact values for:

$\sin\frac{5\pi}{2} =$

$\cos\frac{\pi}{6} =$

19) Use the given function values and the trigonometric identities to find the exact value of each indicated trigonometric function.

$\sin(\alpha) = \frac{12}{13}$

$\sin(\alpha) =$

$\cos(\alpha) =$

$\tan(\alpha) =$

$\cot(\alpha) =$

$\csc(\alpha) =$

$\sec(\alpha) =$

20) Solve exactly for all values of Theta on [-2π,2π] where $\sin\Theta = 1$

21) Solve exactly for all values of Theta on [-2π,2π] where $\tan\Theta = -1$

22) State the period and amplitude for y=4sin3x

Period:

Amplitude:

23) Sketch the graph of y=arcsinx and give the domain and range.

24) Verify the identity:

$$\frac{cos^2(\frac{\pi}{2} - x)}{\cos(x)} = \sin(x)\tan(x)$$

25) State the quadrant in which θ lies when:
sin $\theta < 0$ and cos $\theta > 0$

Use a calculator to evaluate the trigonometric function. Round your answer to four decimal places.

sec 225° = _____

26) Verify the identity:

$$9\cos(t) + 9\sin(t)\tan(t) = 9\sec(t)$$

27) Verify the identity (Hint: try factoring):

$$9cos^2\beta - 9sin^2\beta = 9 - 18sin^2\beta$$

28) Approximate (to three decimal places) the solutions of the equation in the interval $[0, 2\pi)$.

$4\tan^2(x) = 19$

29) Solve the equation.

$10\cos^2(x) + 5\cos(x) - 5 = 0$

30) Verify the identity.

$\sec(x) - \cos(x) = \sin(x)\tan(x)$

31) Find the exact values of the sine, cosine, and tangent of the angle. $\frac{11\pi}{12} = \frac{3\pi}{4} + \frac{\pi}{6}$

32) Solve for a triangle given

a = 51 m A =
b = B = 20° 30'
c = 41m C =