Review of Quizzes

1. Rewrite $\frac{3\pi}{2}$ radians in degree measure. (2pts)

2. Find an angle coterminal to $\frac{3\pi}{4}$. (2pts)

3. If a merry-go-round is spinning at 20 revolutions per minute. What is the angular speed of the merry-go-round? (3pts)

4. Given that t is the real number that corresponds to the point (x, y) on the unit circle, fill in the following: (6pts)

$\sin(t) =$ $\qquad\qquad$ $\csc(t) =$

$\cos(t) =$ $\qquad\qquad$ $\sec(t) =$

$\tan(t) =$ $\qquad\qquad$ $\cot(t) =$

5. Find the point (x, y) on the unit circle that corresponds to $t = \frac{5\pi}{4}$. (1pt)

6. Evaluate the sine and cosine for $t = -\frac{4\pi}{3}$. (3pts)
$\sin\left(-\frac{4\pi}{3}\right) =$
$\cos\left(-\frac{4\pi}{3}\right) =$
$\tan\left(-\frac{4\pi}{3}\right) =$

7. Given that $\cos(x) = \frac{1}{5}$ find the following. (Assume $0 \leq x \leq \frac{\pi}{2}$.)(5 pts)

$\sin(x) =$ $\qquad\qquad$ $\tan(x) =$

$\sec(x) =$ $\qquad\qquad$ $\csc(\frac{\pi}{2} - x) =$

8. Use trigonometric identities to transform the left side of the equation into the right side. (Assume $0 \le x \le \frac{\pi}{2}$.) Show all steps! (3pts)

$$\tan(x)\csc(x) = \sec(x)$$

9. Evaluate using any technique. (2pts)

$\sin(\frac{7\pi}{4}) =$

10. Given that $\cos(x) = \frac{1}{5}$ find the following. (Assume $0 \le x \le \frac{\pi}{2}$.)(5 pts)

$\sin(x) =$ $\tan(x) =$

$\sec(x) =$ $\csc(\frac{\pi}{2} - x) =$

11. Use trigonometric identities to transform the left side of the equation into the right side. (Assume $0 \le x \le \frac{\pi}{2}$.) Show all steps! (3pts)

$$\tan(x)\csc(x) = \sec(x)$$

12. Evaluate using any technique. (2pts)

$\sin(\frac{7\pi}{4}) =$

13. Given $y = \tan\left(\frac{x}{3} - \frac{\pi}{2}\right)$. (4pts)

What is the period of the graph?

What is the phase shift of the graph?

14. What is the domain and range of $\arccos(x)$. (2pts)

Domain:____________ Range:____________

15. Evaluate the following without a calculator. Give an exact answer in radians. (5pts)

$\cos^{-1}\left(-\frac{\sqrt{2}}{2}\right)=$________ $\sin^{-1}\left(\frac{1}{2}\right)=$________ $\arcsin(\sin(2\pi))=$________

16. Find the exact value of $\cos(\tan^{-1}(2))$. (3pts)

17. Two boys are flying a kite. The string attached to the kite is 150ft long when stretched fully. (5pts)

a) If the boys sight the angle of elevation at 50 degrees. How high is the kite?

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b) Later, one of the boys measures the distance from the first boy to directly beneath the kite as 50ft. What is the angle of ascension to the kite? (Angle of elevation)

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18. Simplify the following expressions and circle the letter of the expression it matches. You must show some work.(5pts)

a) $\dfrac{\cos^2\alpha - 1}{\cos\alpha - 1} =$

A. $\cos\alpha - 1$ B. $\sec\alpha + 1$ C. $\cos\alpha + 1$ D. $\dfrac{\sin^2\alpha}{\cos\alpha - 1}$ E. None of the before

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b) $\tan x \sec^2 x - \tan x =$

A. 1 B. $\cot x$ C. $\tan^3 x$ D. $\dfrac{\sin x}{\cos^3 x}$ E. None of the before

19. Find the exact value of: $\cos\left(\frac{2\pi}{3} - \frac{\pi}{6}\right)$. (3pt)

20. Prove the identity $\sin\left(\frac{5\pi}{2} + x\right) = \cos(x)$ (3pt)

21. Verify the identity using the sum of angle formula: (4pt)

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

22. Solve the triangle with the given information: $A = 42°$, $a = 22$, & $b = 12$. Explain why there can be only one solution. (5pt)

$B =$____________ $C =$____________ $c=$____________

Given $\vec{u} = \langle 1, 2\rangle$ and $\vec{v} = \langle 3, -2\rangle$ answer questions 1-3.
23. Find the magnitude of the vector $\vec{v}$ (2pt)

24. Find the direction angle of the vector $\vec{v}$ (3pt)

25. Find $2\vec{v} - 3\vec{u}$ Write your answer as a linear combination of the standard vectors $\vec{i} = \langle 1, 0\rangle$, $\vec{j} = \langle 0, 1\rangle$. (3pt)

26. If a vector $\vec{a}$ has magnitude 20 and direction angle of $\theta = \frac{5\pi}{3}$.
Give the exact value of the vertical component (the $\vec{j}$ component). (3pt)