Pre-Calculus: Unit 3 Test Review

Name:

1. What is the exact value of $tan(195\ degrees)$?

2. Which expression is equivalent to $cos(\frac{\pi}{12})cos(\frac{5\pi}{12}) + sin(\frac{\pi}{12})sin(\frac{5\pi}{12})$?
   a. $cos(-\frac{\pi}{3})$
   b. $sin(\frac{\pi}{2})$
   c. $sin(-\frac{\pi}{3})$
   d. $cos(\frac{\pi}{2})$

3. What is the exact value of $tan(\frac{19\pi}{12})$?

4. Simplify $sin(x + \pi)$.

5. What is the value of $1 - 2sin^2(105\ degrees)$?

6. Which expression is equal to $\frac{1}{sin(2x)} - \frac{cos(2x)}{sin(2x)}$?
   a. $\frac{1}{cos(x)}$
   b. $tan(x)$
   c. $-\frac{1}{cos(x)}$
   d. $-\ tan(x)$

7. Which statement is true about the graph of the equation $y = csc^{-1}(x)$?
   a. There is a vertical asymptote at $x = \frac{\pi}{2}$.
   b. There is a vertical asymptote at $x = 0$.
   c. There is a horizontal asymptote at $y = 0$.
   d. There is a horizontal asymptote at $y = \frac{\pi}{2}$.

8. What is the solution to the inequality $sin(x) > cos(x)$ over the interval $0 \leq x \leq 2\pi$.

9. Complete step 4 of the proof.

Review the proof of $\cos(A - B) = \cos A \cos B + \sin A \sin B$.

Step 1: $\sqrt{(\cos A - \cos B)^2 + (SinA - \sin B)^2}$

$= \sqrt{(\cos(A - B) - 1)^2 + (\sin(A - B) - 0)^2}$

Step 2: $(\cos A - \cos B)^2 + (\sin A - \sin B)^2$

$= (\cos(A - B) - 1)^2 + (\sin(A - B) - 0)^2$

Step 3: $\cos^2 A - 2\cos A \cos B + \cos^2 B$

$+ \sin^2 A - 2\sin A \sin B + \sin^2 B$

$= \cos^2(A - B) - 2(\cos(A - B))$

$+1 + \sin^2(A - B)$

Step 4:_____ $-2\cos A \cos B - 2\sin A \sin B$

$=$ _____ $-2\cos(A - B) + 1$

Step 5: $-2(\cos A \cos B + \sin A \sin B) = \cos(A - B)$

Step 6: $\cos A \cos B + \sin A \sin B = \cos(A - B)$

Step 7: $\cos(A - B) = \cos A \cos B + \sin A \sin B$