Name_____

Trigonometry2 Assignment #3

1. Verify the following identities for the given value of the variable:

   a) $\cot x = \dfrac{\cos x}{\sin x}$ for $x = \dfrac{\pi}{3}$

   b) $\sin^2 x + \cos^2 x = 1$ for $x = \dfrac{\pi}{4}$

2. Verify the identity $1 + \cot^2 x = \csc^2 x$ for the given values:

   a) $x = \dfrac{\pi}{6}$

   b) $x = \dfrac{4\pi}{3}$

3. Factor to write each in a simpler form.

   a) $\sec x \sin^2 x - \sec x$

   b) $\sin^4 \theta - \cos^4 \theta$

4. In each of the following:

i) verify the possibility of an identity using a graphing calculator
ii) prove the identity using an algebraic approach
iii) state any restrictions.

a) $\dfrac{\tan\theta\cos\theta}{\sin\theta} = 1$

b) $\sec^2 x - \sin^2 x = \cos^2 x + \tan^2 x$

5. Prove the following identities using an algebraic approach.

a) $(1-\cos^2 x)(\csc x) = \sin x$

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

c) $\dfrac{1-\cos x}{\sin x} = \dfrac{\tan x - \sin x}{\tan x \sin x}$.

d) $\dfrac{2}{1-\sin x} + \dfrac{2}{1+\sin x} = 4\sec^2 x$

e) $\dfrac{1+\cos x}{\tan x + \sin x} = \cot x$

f) $\sec x - \cos x = \dfrac{\sin x}{\cot x}$

In questions #7 - #11 assume the appropriate restrictions.

7. $\dfrac{\cos x}{1-\sin^2 x}$ is equal to

A. $\sec x$

B. $\csc x$

C. $\sin x$

D. $\tan x$

8. $\dfrac{\tan^2 x+1}{\sec x}$ is equal to

A. $\sec x$

B. $\csc x$

C. $\sin x$

D. $\tan x$

9. $\dfrac{\csc x}{\cot x}$ is equal to

A. $\cos x$

B. $\sin x$

C. $\sec x$

D. $\tan x$

10. The expression $\dfrac{\tan A \cos^2 A}{\sec A}$, expressed in terms of $\sin A$ is

A. $\dfrac{\sin A}{1-\sin^2 A}$

B. $\dfrac{1-\sin^2 A}{\sin A}$

C. $\sin^2 A$

D. $\sin A - \sin^3 A$

11. $\sec x - \cos x$ is equal to

A. $\dfrac{1-\cos x}{\cos x}$

B. $\sin^2 x$

C. $\dfrac{1-2\cos x}{\cos x}$

D. $\sin x \tan x$

12. Which of the following in NOT an identity?

A. $\cos^2 x + \sin^2 x = 1$

B. $\sin x + \cos x = 1$

C. $\sec^2 x - \tan^2 x = 1$

D. $\tan x \cot x = 1$

13. If $\tan x \neq 0$, $\cos x \neq 0$, $\cot x \neq 0$ then

$\dfrac{1}{\tan x \cos x \cot x}$ is equal to

A. $\dfrac{1}{\sin x}$

B. $\sin x$

C. $\dfrac{1}{\cos x}$

D. $\cos x$

14. If $\sin x \neq 0$, $\cos x \neq 0$ then

$\dfrac{\tan x \cos x}{3 \sec x \cot x}$ is equal to

A. $\dfrac{1}{3}$

B. 3

C. $\dfrac{1}{3} \sin^2 x$

D. $\dfrac{1}{3} \csc^2 x$

15. When verifying the identity $\cot^2 x + 1 = \csc^2 x$ for $x = \dfrac{\pi}{7}$, the value on each side of the identity, to the nearest tenth, is _____ .

(Record your answer in the numerical response box from left to right)

NAME_____

TRIGONOMETERY 2 ASSIGNMENT # 4

Prove the following identities.

1. $\cos x = \sin x \cot x$

2. $\dfrac{\tan\theta\cos\theta}{\sin\theta} = 1$

3. $\sec\theta - \cos\theta = \sin\theta\tan\theta$

4. $\sec A - \cos A = \sin A \tan A$

5. $(\sin r + \cos r)^2 = 1 + 2\sin r\cos r$

6. $\dfrac{\cos\theta - \sin\theta}{\cos\theta} = 1 - \tan\theta$

7. $\sec^2\theta - \sin^2\theta = \cos^2\theta + \tan^2\theta$

8. $\dfrac{\cot x - 1}{\tan x - 1} = -\cot x$

9. $\dfrac{1-\cos A}{\sin A} = \dfrac{\sin A}{1+\cos A}$

10. $(1-\cos^2\alpha)(\csc\alpha) = \sin\alpha$

11. $\tan\theta\cos\theta = \sin\theta$

12. $\sin\theta\cot\theta = \cos\theta$

13. $\csc\theta(1+\sin\theta) = 1+\csc\theta$

14. $\cos\theta(\sec\theta - 1) = 1-\cos\theta$

15. $\sin\theta\tan\theta + \sec\theta = \dfrac{\sin^2\theta + 1}{\cos\theta}$

16. $\dfrac{1+\sin\theta}{1-\sin\theta} = \dfrac{\csc\theta + 1}{\csc\theta - 1}$

17. $\dfrac{\sin\theta + \tan\theta}{\cos\theta + 1} = \tan\theta$

18. $\sin^2\theta\cot^2\theta = 1 - \sin^2\theta$

19. $\sin^2\theta = \dfrac{\tan^2\theta}{1+\tan^2\theta}$