Int. Trig
Pythagorean, Sum & Diff.

Identities Worksheet Packet

Name_____

Due Tuesday , Oct. 25 … Test Wednesday Oct. 26

Prove the following identities.

1. $\tan(\theta)\cot(\theta)=1$

2. $\frac{\cos(\theta)}{1-\sin^2(\theta)}=\sec(\theta)$

3. $\csc^2(\phi)-\csc^2(\phi)\cos^2(\phi)=1$

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

5. $\frac{\tan(\theta)\cos(\theta)\csc(\theta)}{(\sec(\theta)-\tan(\theta))(\sec(\theta)+\tan(\theta))}=1$

6. $\frac{(\sec(\theta)+1)(\sec(\theta)-1)}{\sin^2(\theta)}=\sec^2(\theta)$

7. $\tan x+\cot x=\sec x\csc x$

8. $\sin\theta\cos\theta\tan\theta+\cos^2\theta=1$

9. $\frac{1-\sin^2 x}{1-\cos^2 x}=\cot^2 x$

10. $\frac{\sin x\cos x}{1-\sin^2 x}=\tan x$

11. $(1-\cos x)(1+\sec x)=\sin x\tan x$

12. $\sec^2 x-\tan x\cot x=\tan^2 x$

13. $7\sec\theta+5\csc\theta=\frac{7\sin\theta+5\cos\theta}{\sin\theta\cos\theta}$

Textbook Problems: pg. 471 – 472
#41, 43, 45, 46, 57, 67, 68, 70, 71

7.2 Practice Worksheet

Name: _____

Verify each identity.

1. $\sin^2 A \cot^2 A = (1-\sin A)(1+\sin A)$

2. $\cos^2 A + \tan^2 A \cos^2 A = 1$

3. $\dfrac{\cos B}{\sin B \cot^2 B} = \tan B$

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

5. $\dfrac{1}{\sec^2\theta} + \dfrac{1}{\csc^2\theta} - 1 = 0$

6. $\sin\theta(1+\cot^2\theta) = \csc\theta$

7. $\dfrac{\sec\theta}{\cos\theta} - \dfrac{\tan\theta}{\cot\theta} = 1$

8. $\dfrac{1}{\csc^2\theta} + \sec^2\theta + \dfrac{1}{\sec^2\theta} = 2 + \dfrac{\sin^2\theta}{\cos^2\theta}$

9. $\dfrac{\cos x}{1+\sin x} + \dfrac{\cos x}{1-\sin x} = 2\sec x$

10. $\dfrac{1+\tan^2 x}{\csc^2 x} = \tan^2 x$

11. $\dfrac{1-\sin^2 x}{1-\cos^2 x} = \cot^2 x$

12. $\sin\theta\cos\theta\tan\theta + \cos^2\theta = 1$

13. $(1-\cos x)(1+\sec x) = \sin x \tan x$

14. $\sin^3\theta\cos\theta - \sin^5\theta\cos\theta = \sin^3\theta\cos^3\theta$

15. $\sin^2 x \cos^2 x + \cos^4 x = 1 - \sin^2 x$

Sum and Difference

Find the exact value if $0<x<\frac{\pi}{2}$ *and* $0<y<\frac{\pi}{2}$

1. $\sec(x-y)$ if $\tan x=\frac{7}{6}$ and $\csc y=\frac{8}{5}$

2. $\cos(x-y)$ if $\cos x=\frac{5}{13}$ and $\cos y=\frac{4}{5}$

3. $\tan(x-y)$ if $\sin x=\frac{8}{17}$ and $\cos y=\frac{3}{5}$

4. $\cos(x-y)$ if $\cos x=\frac{3}{5}$ and $\cos y=\frac{4}{5}$

5. cos (x+y) if $\sin x=\frac{5}{13}$ and $\sin y=\frac{4}{5}$

6. $\sin(x-y)$ if $\cos x=\frac{8}{17}$ and $\cos y=\frac{3}{5}$

7. $\tan(x-y)$ if $\csc x=\frac{13}{5}$ and $\cot y=\frac{4}{3}$

Verify that each equation is an identity

11. $\cos(\frac{\pi}{2} + x) = -\sin x$

12. $\cos(180^0 + x) = -\cos x$

Textbook Problems: Pg. 481 – 482
#21, 23, 25, 27, 29, 31, 34,
39, 41, 45, 47, 48, 51, 52, 54