Name: _____

Extra Practice:

Prove the following trigonometric identities.

1. $\frac{1+\cos x}{\sin x}+\frac{\sin x}{1+\cos x}=2\csc x$

2. $\frac{\csc^2 x-1}{\csc^2 x}=\cos^2 x$

3. $\frac{1}{1-\cos x}+\frac{1}{1+\cos x}=2\csc^2 x$

4. $\left(\cot^2 x+1\right)\left(\sin^2 x-1\right)=-\cot^2 x$

Sum and Difference:

Use the sum/difference identity to find the exact value. Check on your calculator

5. $sin15°$

6. $tan15°$

7. $sin75°$

8. $cos75°$

9. $cos\frac{\pi}{12}$

10. $sin\frac{7\pi}{12}$

11. $tan\frac{5\pi}{12}$

12. $tan\frac{11\pi}{12}$

13. $sin\frac{-\pi}{12}$

14. $cos\frac{7\pi}{12}$

Prove each of the following.

15. $\sin(\alpha+\beta)+\sin(\alpha-\beta)=2\sin\alpha\cos\beta$

16.) $\frac{\sin(\alpha+\beta)}{\sin\alpha\cos\beta}=1+\cot\alpha\tan\beta$

17. $\frac{\cos(\alpha+\beta)}{\cos\alpha\cos\beta}=1-\tan\alpha\tan\beta$

18. given: $\csc\alpha=\frac{13}{5}$, $\frac{\pi}{2}\le\alpha\le\pi$, and $\tan\beta=-\frac{3}{4}$, $\frac{3\pi}{2}\le\beta\le2\pi$, find the following:

$\sin(\alpha-\beta)$ $\cos(\beta+\alpha)$ $\tan(\alpha-\beta)$