GSE PreCalculus **Name______________________________**
Test 5B Review: Trig Identities

Know the following:

1. Unit Circle – finding the exact value of angle (i.e. cos 60)
2. Inverses
   a. Identify the graphs of inverse functions (sin, cos, tan)
   b. How to find the inverse given the coordinate (i.e. $\cos^{-1}\left(\frac{1}{2}\right)$ - answer in degrees and radians)

Given that α and β **are in quadrant 2 and** $\sin\alpha = \frac{4}{5}$ and $\cos\beta = -\frac{15}{17}$**, find:**

1. $\cos\alpha$

2. $\sin\beta$

3. $\sin(2\alpha)$

4. $\cos(2\beta)$

5. $\tan(2\beta)$

6. $\cos(\alpha+\beta)$

Use half angle formulas to solve the following

7. $\cos 157.5° =$

8. $\sin 15° =$

Solve.

9. $2\sin^2 x = 2 + \cos x$

10. $2\sin\alpha\cos\alpha = \sin\alpha$

11. $\sin^2 x - 3\cos x = 3$

12. $2\sin^2 x = 9sinx + 5$

13. $\sin^2\beta - \sin\beta = 0$

Verify the following.

14. $\sin(x+y)+\sin(x-y)=2\sin x\cos y$

15. $\dfrac{\sin x}{\sin x-\cos x}=\dfrac{1}{1-\cot x}$

16. $\sec^4 x-\tan^4 x=1+2\tan^2 x$

16. $\cos^2 x(1+\tan^2 x)=1$

17. $\csc 2\theta=\dfrac{\csc\theta}{2\cos\theta}$

18. $\sec 2\theta=\dfrac{\sec^2\theta}{2-\sec^2\theta}$

19. $\cos^4 x-\sin^4 x=\cos 2x$

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

<u>Cumulative Review from Test 1-5A:</u>

21. Identify the following conics: a. $\dfrac{(x-3)^2}{25}+\dfrac{y^2}{9}=1$ b. $(x+1)^2+y^2=16$

22. Multiply the following matrices: $\begin{bmatrix} x & -1 \\ 2 & 3 \end{bmatrix}\cdot\begin{bmatrix} 3 & 2 \\ -2 & 1 \end{bmatrix}$

23. Solve the linear system: $\begin{matrix} 2x+4y=8 \\ x-2y=12 \end{matrix}$

24. Find a positive co-terminal angle to: a. $\theta=-\dfrac{2\pi}{7}$ b. $\theta=\dfrac{\pi}{5}$

25. . If $\tan\theta=\dfrac{5}{12}$ and θ is in quadrant 3, what is the exact value of cos θ?

26. Find the reference angle: a. $\theta=120°$ b. $\theta=315°$

27. Find the exact value of the following function: $\sin\left(-\dfrac{4\pi}{3}\right)$

28. Evaluate: $\cos^{-1}\left(\dfrac{1}{2}\right)$