Algebra 2/Trigonometry IB Chapter 5 Test Review 2016 Name_____

You must show all of your work to get credit on the test.

If $\sin u = \frac{3}{5}, \frac{\pi}{2} < u < \pi$, and $\cos v = \frac{8}{17}, \frac{2\pi}{3} < v < 2\pi$, find the exact value of the following.

1. $\sin 2u$
2. $\csc(u - v)$
3. $\cot 2v$

Find the exact value of each.

4. $\sin(75°)$
5. $\sin(330°)\cos(30°) - \cos(330°)\sin(30°)$

6. Use power-reducing-formulas to write $[\sin^2(x)]\cos^2(x)$ in terms of a first power cosine.

7. Use product-to-sum formulas to write $\cos 2x \sin 4x$ as a sum or difference.

8. Use sum-to-product formulas to find the exact value of $\sin 105° - \sin 15°$

Solve $[0, 2\pi)$. **CHOOSE 5 OF THE 6 and circle them so I know which you want graded.**

1. $\csc^2(x) - \sqrt{2}\csc(x) = 0$
2. $\sin(2x) = \cos(x)$
3. $tan^2 x + \sec x = 1$
4. $5sin^2 x - 4\sin x - 1 = 0$
5. $2\cos 2x \sin x - \sqrt{3}\sin x = 0$
6. $2\sin^2(x) + \sin(x) = 0$

Verify. **CHOOSE 5 OF THE 6 and circle them so I know which you want graded**. 4 points each.

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

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

3. $\tan(x)\csc(x) = \sec(x)$

4. $\frac{\tan^2(x)+1}{1+\cot^2(x)} = \tan^2(x)$

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

6. $\sin(x)[\csc(x) - \sin(x)] = \cos^2(x)$

7. $\frac{1-\sin^2(\ )}{\csc^2(\ )-1} = \sin^2(x)$

8. $\tan^2(x) - \tan^2(x)\sin^2(x) = \sin^2(x)$

9. $\frac{\sin(x)}{1-\cos(x)} + \frac{1-\cos(x)}{\sin(x)} = 2\csc(x)$

10. $\cos(x) + \sin(x)\tan(x) = \sec(x)$

$$\sin^2 u = \frac{1-\cos 2u}{2} \qquad \cos^2 u = \frac{1+\cos 2u}{2} \qquad \tan^2 u = \frac{1-\cos 2u}{1+\cos 2u}$$

$$\sin u \sin v = \frac{1}{2}[\cos(u-v) - \cos(u+v)] \qquad \cos u \cos v = \frac{1}{2}[\cos(u-v) + \cos(u+v)$$

$$\sin u \cos v = \frac{1}{2}[\sin(u+v) + \sin(u-v)] \qquad \cos u \sin v = \frac{1}{2}[\sin(u+v) - \sin(u-v)]$$

$$\sin u + \sin v = 2\sin(\frac{u+v}{2})\cos(\frac{u-v}{2}) \qquad \sin u - \sin v = 2\cos\left(\frac{u+v}{2}\right)\sin(\frac{u-v}{2})$$

$$\cos u + \cos v = 2\cos\left(\frac{u+v}{2}\right)\cos(\frac{u-v}{2}) \qquad \cos u - \cos v = -2\sin(\frac{u+v}{2})\sin(\frac{u-v}{2})$$