162 Test 3 Name________________________________

1. Use the addition angle formula for sine to find $\sin\left(\frac{\pi}{4}+\frac{2\pi}{3}\right)$

2. Use the subtraction formula for cosine to show $\cos\left(x-\frac{3\pi}{3}\right)=-\sin x$

3. Find the exact value of $\cos(u+v)$ if $\sin u=\frac{3}{5}, \cos v=\frac{5}{13}$ with both *u, v* in quadrant 1

4. Find $\sin\left(\sin^{-1}\left(\tfrac{1}{2}\right)+\cos^{-1}0\right)$

5. Solve for *x* over the interval $[0,2\pi)$: $2\sin x+2=3$

6. "Simplify"; $\sec x\left(1-\sin^2 x\right)$

7. Add and simplify: $\frac{\sin x}{1+\cos x}+\frac{\cos x}{\sin x}$

8. Starting with the identity $\cos^2(x)+\sin^2(x)=1$, find the corresponding identity with $\tan^2(x)$

9. Multiply: $(1-3i)(1+3i)$

10. Find the solutions to $x^2-2x+10=0$ and write your answer in standard form.

11. Find $\left|\sqrt{3}+i\right|$

12. Find the argument of $\sqrt{3}+i$. That is, find the angle.

13. Using your answers in 12 and 13, write $\sqrt{3}+i$ in trigonometric form. That is write $\sqrt{3}+i=r\left(\cos(\theta)\right)+i\sin(\theta)$

14. Use the trigonometric form to raise $\sqrt{3}+i$ to the 6^{th} power. That is, find $\left(\sqrt{3}+i\right)^6$

15. Convert your answer to standard form.

16. Find the three cube roots of –1.

17. Using your answer above, find the 3 cube roots of –8