Pre-Calculus 8.3 Review **Complex Numbers** **Name:**_____**Hr:**_____

Change into polar form. $(rcis\theta)$

1. $-2\sqrt{3}+2i$

2. $3-i\sqrt{3}$

3. $2+2i$

4. $-3i$

5. $\frac{1}{2}-\frac{\sqrt{3}}{2}i$

6. -1

1.)___ $4cis150°$ _____

2.)___ $2\sqrt{3}cis330°$ __

3.)____ $2\sqrt{2}cis45°$ ___

4.)____ $3cis270°$ ____

5.)____ $1cis300°$ _____

6.)_____ $1cis180°$ ___

Change to rectangular complex number $(a+bi)$. **No decimals please!**

7. $z=2cis300°$

8. $z=3cis0°$

9. $z=-5cis180°$

7.)____ $1-i\sqrt{3}$ _____

8.)_____ 3 _____

9.)_____ 5 _____

10. $z=\cos\frac{5\pi}{4}+i\sin\frac{5\pi}{4}$

11. $z=\cos\pi+i\sin\pi$

10.)___ $\frac{-\sqrt{2}}{2}-i\frac{\sqrt{2}}{2}$ __

11.)_____ -1 _____

Find the following WITHOUT CALCULATORS. Give answers in $(rcis\theta)$ form (must use polar complex numbers).

12. $(1-i)^4$

13. $\dfrac{(1-i\sqrt{3})}{(2+2\sqrt{3}i)}$

14. $(-2-2i)(-1-i)$

12.)___ $1cis180°$ _____

13.)____ $\frac{1}{2}cis0°$ _____

14.)_____ $4cis90°$ ____

15. The cube roots of $(1+i)$ there are 3 answers, give answers in $(rcis\theta)$ form.

_____$\sqrt[6]{2}cis15°$ _____

_____$\sqrt[6]{2}cis135°$ _____

_____$\sqrt[6]{2}cis225°$ _____

16. Solve $z^3-1=0$ there are 3 answers, give answers in $a+bi$ form.

_____1_____

_____ $\frac{-1}{2}+i\frac{\sqrt{3}}{2}$ _____

_____ $\frac{-1}{2}-i\frac{\sqrt{3}}{2}$ _____