1. Demonstrate use of DeMoivre's Theorem to find the 3 cube roots of 8.

2. Use DeMoivre's Rule to find Roots

3. Find all the square roots of $4 + 4\sqrt{3}$

   $\left(4+4\sqrt{3}\right)^{1/2}$

   Convert to cis Form 2 ways: 1st with a positive angle less than 2π, then another with 2π added

	Conversion 1	Conversion 2
Convert	$\left(8\,cis\frac{\pi}{3}\right)^{1/2}$	$\left(8\,cis\frac{7\pi}{3}\right)$
Use DeMoivre's Theorem	$2\sqrt{2}\ cis\frac{\pi}{6}$	$2\sqrt{2}\ cis\frac{7\pi}{6}$
	$2\sqrt{2}\cos\frac{\pi}{6}+2\sqrt{2}\sin\frac{\pi}{6}\mathrm{i}$	$2\sqrt{2}\cos\frac{7\pi}{6}+2\sqrt{2}\sin\frac{7\pi}{6}\mathrm{i}$
Convert Back to Standard Form	$2\sqrt{2}\frac{\sqrt{3}}{2}+2\sqrt{2}\frac{1}{2}i$	$2\sqrt{2}\frac{-\sqrt{3}}{2}+2\sqrt{2}\frac{-1}{2}i$
	$\boxed{\sqrt{6}+\sqrt{2}i}$	$\boxed{-\sqrt{6}-\sqrt{2}i}$

4. When asked for square roots, there should be 2 found.

5. When asked for 5th roots, there should be 5 answers, etc.

6. Start in the normal cis form, then keep adding 2π (or 360°) until you get the desired number of variations needed. If you want 4th roots then get 3 additional variations.

7. Generally, unless otherwise instructed, when problems are given in Standard Form, you should make the results also in Standard Form.

8. Generaly, unless otherwise instructed, when problems are given in Trigonometric Form (cis Form), you should make the results also in Trigonometric Form.

Pre-Calculus 2 Assignment 211 Monday, February 23, 2014 Hour Name ____________________

Use DeMoivre's Theorem to find the indicated power of the complex number. Write the result in standard form.

1.	Find the square roots of 5 cis 120°
2.	Find the cube roots of -27i
3.	Find the cube roots of 1000
4.	Find the cube roots of -125
5.	Find the 4th roots of -4

6. Solve: $x^3 + 27 = 0$

7. Solve: $x^4 - 81 = 0$

8. Solve: $x^3 - 27 = 0$

9. Solve: $x^2 + 8 + 8\sqrt{3}\ i = 0$. Give an Exact Answer in Standard Rectangular Form.

10. Solve: $x^3 + 75 - 100\ i = 0$. Answer in Standard Rectangular Form with 3-decimal place accuracy.