QUIZ 1 - MATH 313: COMPLEX ANALYSIS - FALL 2013

Do as many of the problems you can now, turn it in. I will mail you the quiz after class in case you did not have time to finish, or you would like a second chance on any of the turned in problems, bring your solutions on Thursday 8/22/2013.

1. Check that $(\sqrt{2} - i) - i(1 - \sqrt{2}i) = -2i$.

2. Find $a$ and $b$ real numbers so that
   \[
   \frac{4 + i}{2 - 3i} = a + ib.
   \]

3. Let $z = -1 + i$.
   (a) Find the modulus of $z$, $|z|$, and the complex conjugate of $z$, $\bar{z}$. Plot $z$ and $\bar{z}$ in the complex plane.
   (b) Write $z$ in polar coordinates, $z = re^{i\theta}$. Find the set arg $z$.
   (c) Find the complex number $(-1 + i)^7$.
   (d) Find the three cubic roots of $z$, namely all solutions to the equation $w^3 = -1 + i$. 

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