Complex variables: Quiz 1 June 22nd 2005

Show your work

Question 1

Let $a = 3 + 4i$ and $b = 1 - 2i$.

- Plot $a$, $b$, $ib$, $a - ib$ and $a + ib$ on the complex plane.
- Compute the sizes (moduli) of the complex numbers $a$, $b$, $ib$, $ab$, $a^2$ and $\frac{1}{a}$ and discuss your results.

Question 2

The complex number $z$ obeys the equation $(3 - i)z + (2 + i)\overline{z} = 4 - 3i$.
What is $z$?

Question 3

Sketch the circles in the complex plane with equations $|z + 2 - i| = 5$ and $|z| = 2\sqrt{5}$ and find their points of intersection.