$2-3i$ is a root to the equation $z^3-7z^2+az+b=0\ , a,b\in\ \mathbb{R}$

Work out ***a*** and ***b*** and the other roots of the equation.

Since this is a cubic equation and we know that it has a complex root, therefore we know • it has 2 complex roots and 1 real root	
	If $z=2\ -\ 3i$ is a root to the polynomial Then $z=2+3i$ is another root
	$(z-2+3i\ )$ is a factor $(z-2-3i)$ is a factor
Multiply these two together to find a quadratic factor	
$(z-2+3i\ )(z-2-3i)$	$=z(z-2-3i)$ $-2(z-2-3i)$ $+3i(z-2-3i)$
	$=z^2-2z-3zi$ $-2z+4+6i$ $+3zi-6i-9i^2$
	$=z^2-4z+13$
There must be 1 real factor. Call it $z-p$	
$(z-p)\ (z^2-4z+13)$	$=z^3-7z^2+az+b$
We can work out p, by considering how we get $-7z^2$	$z(-4z)-p(z^2)=-7z^2$ $-4z^2-pz^2=-7z^2$ $p=3$
We now know the 3 factors $(z-3)\ (z^2-4z+13)$	
$(z-3)\ (z^2-4z+13)$	$=\ z(z^2-4z+13)$ $-3(z^2-4z+13)$ $=z^3-4z+13z$ $-3z^2+12z-39$ $=z^3-7z^2+25z-39$
a = 25 , b = -39 **Roots are $z=3\ ,\ 2-3i\ ,\ 2+3i$**	