Question Number	Scheme	Notes	Marks
1	$f(z)=4z^3-5z^2+14z+15$ **Note:** A minimum acceptable solution would be: $z_1=1-2i,\ z_2=1+2i$ $z_1+z_2=2$ $z_1z_2=1+4=5$ $f(z)=(4z+3)(z^2-2z+5)$ [by inspection] $z_3=-\frac{3}{4}$		
	Another root is $1+2i$	$z=1+2i$ Award B1 for sight of $1+2i$ anywhere in the response	**B1**
	$(z-(1-2i))(z-(1+2i))$ or sum $=1+2i+1-2i=2$, product $=(1+2i)(1-2i)=5$ $\Rightarrow z^2-2z+5$	M1: e.g. $(z\pm1\pm2i)(z\pm1\pm2i)$ or an attempt at the sum and product of roots. Working may be minimal. A1: Correct quadratic factor	**M1 A1**
	$f(z)=(4z+3)(z^2-2z+5)$ M1: Uses their 3-term quadratic expression with real coefficients to attempt a linear factor, obtaining $az+b\quad a,b\neq0$. May be via long division, inspection or comparing coefficients. Do not accept a fully factorised cubic without seeing a valid non-calculator method for the quadratic factor at least. If the linear factor appears in the working before the quadratic factor, this probably indicates calculator use.		**M1**
	$z=-\frac{3}{4}$	Correct real root following correct work. Errors in long division, for example, would be A0, even if two correct roots are found. Condone work in x	**A1**
ALT for M1A1 M1A1	$1+2i+1-2i+z=\frac{5}{4}$	M1: Considers the sum of all 3 roots A1: Correct equation or equivalent working	**M1 A1**
	e.g. $\Rightarrow z=\frac{5}{4}-2$ $z=-\frac{3}{4}$	M1: Attempts to solves their equation, or uses equivalent work involving the sum of the three roots, reaching a value for the third root. A1: Correct real root following correct work. Note that it is possible to obtain a third root of $-\frac{3}{4}$ despite having an incorrect quadratic factor. In this case both A marks are lost. Ignore labelling, e.g. z, z_3, or may work in x.	**M1 A1**
			(5)
			Total 5