Question Number	Scheme	Notes	Marks
5	$2x^2-3x+5=0$		
(a)	$\alpha+\beta=\frac{3}{2},\quad \alpha\beta=\frac{5}{2}$	Both	B1
			(1)
(b)(i)	$\alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta$	Uses a correct identity	M1
	$=\left(\frac{3}{2}\right)^2-2\left(\frac{5}{2}\right)=-\frac{11}{4}\left(=-2.75\right)$	Correct value Allow to come from $\alpha+\beta=-\frac{3}{2}$	A1
(ii)	$\alpha^3+\beta^3=(\alpha+\beta)^3-3\alpha\beta(\alpha+\beta)$	Reaches an identity ready for substitution	M1
	$=\left(\frac{3}{2}\right)^3-3\left(\frac{3}{2}\right)\left(\frac{5}{2}\right)=-\frac{63}{8}\left(=-7.875\right)$	Correct value	A1
			(4)
(c)	$\text{Sum}=\alpha^3+\beta^3-(\alpha+\beta)=-\frac{63}{8}-\frac{3}{2}\left(=-\frac{75}{8}\right)$	Attempts sum Allow eg $(\alpha^3-\beta)+(\beta^3-\alpha)$ followed by $(\alpha^3+\beta^3)+(\alpha+\beta)=...$	M1
	$\text{Prod}=(\alpha\beta)^3-\alpha^4-\beta^4+\alpha\beta$ and $\alpha^4+\beta^4=(\alpha^2+\beta^2)^2-2(\alpha\beta)^2$	Expands $(\alpha^3-\beta)(\beta^3-\alpha)$ and uses a correct identity for $\alpha^4+\beta^4$	M1
	Alt identities: $\alpha^4+\beta^4=$ $(\alpha+\beta)^4-4\alpha\beta(\alpha^2+\beta^2)-6\alpha^2\beta^2;\ \alpha^4+\beta^4=(\alpha^3+\beta^3)(\alpha+\beta)-\alpha\beta(\alpha^2+\beta^2)$		
	$(\alpha\beta)^3-\alpha^4-\beta^4+\alpha\beta=\left(\frac{5}{2}\right)^3+\frac{5}{2}-\left(\left(-\frac{11}{4}\right)^2-2\left(\frac{5}{2}\right)^2\right)=\frac{369}{16}$		A1
	$x^2+\frac{75}{8}x+\frac{369}{16}(=0)$	Applies x^2 – (their sum)x + their prod (= 0)	M1
	$16x^2+150x+369=0$	Allow any integer multiple	A1
			(5)
			Total 10