Question	Answer	Marks	Guidance
1	$a = 4$	**B1**	
	$b = \frac{3}{8}$ oe	**B1**	
	$c = -2$	**B1**	
2	$(x =)\ \frac{4 \pm \sqrt{16 + 12\left(2+\sqrt{5}\right)\left(2-\sqrt{5}\right)}}{2\left(2+\sqrt{5}\right)}$ oe with simplification to $\frac{4 \pm \sqrt{16-k}}{2\left(2+\sqrt{5}\right)}$	**M1**	For attempt to equate to zero and use quadratic formula, must see substitution and $\frac{4 \pm \sqrt{16-k}}{2\left(2+\sqrt{5}\right)}$
	$\frac{4 \pm 2}{2\left(2+\sqrt{5}\right)}$ or exact equivalent	**2**	**A1** for one exact solution
	$\frac{3}{2+\sqrt{5}} \times \frac{2-\sqrt{5}}{2-\sqrt{5}}$ or $\frac{1}{2+\sqrt{5}} \times \frac{2-\sqrt{5}}{2-\sqrt{5}}$	**M1**	For evidence of rationalisation and evaluation
	$-6+3\sqrt{5}$ and $-2+\sqrt{5}$	**A1**	
	Alternative $\left(\left(2+\sqrt{5}\right)x-3\right)\left(x+\left(2-\sqrt{5}\right)\right)$	**(B2)**	
	$x = -2+\sqrt{5}$	**(B1)**	**Dep** on previous **B2**
	$\frac{3}{2+\sqrt{5}} \times \frac{2-\sqrt{5}}{2-\sqrt{5}}$ leading to $x = -6+3\sqrt{5}$	**(2)**	**M1** for attempt at rationalisation and evaluation
3(a)	$\pm 3(x+2)(x-1)(x-4)$	**3**	**B1** for 3 soi **B1** for $\pm$ **B1** for $(x+2)(x-1)(x-4)$

Question	Answer	Marks	Guidance
3(b)	$5x-2*4x+1$ leading to critical value 3	**B1**	* can be $\leqslant$, =, $\geqslant$
	$5x-2*-4x-1$ oe	**M1**	* can be $\leqslant$, =, $\geqslant$
	leading to critical value $\frac{1}{9}$	**A1**	
	$\frac{1}{9} \leqslant x \leqslant 3$	**A1**	Mark final answer
	Alternative $9x^2-28x+3*0$	**(M1)**	Squaring both sides of the inequality and collecting terms, allow one sign error. * can be $\leqslant$, =, $\geqslant$
	$(9x-1)(x-3)*0$	**(M1)**	**Dep** for attempt to find two critical values * can be $\leqslant$, =, $\geqslant$
	Critical values $\frac{1}{9}$ and 3	**(A1)**	
	$\frac{1}{9} \leqslant x \leqslant 3$	**(A1)**	Mark final answer
4(a)	$r\theta = 12$ soi	**B1**	
	$\frac{1}{2}r^2\theta = 57.6$ soi	**B1**	
	$r = 9.6$ oe nfww	**B1**	
	$\theta = 1.25$ oe nfww	**B1**	
4(b)	$AC = 28.89$	**B1**	
	Shaded area = $\left(\frac{1}{2}\times 28.89\times 9.6\right)-57.6$ soi	**M1**	Using *their AC*
	81.1	**A1**	
	Alternative $OC = 30.45$	**(B1)**	
	Shaded area = $\left(\frac{1}{2}\times 30.45\times 9.6\times \sin 1.25\right)-57.6$ soi	**(M1)**	Using *their OC*
	81.1	**(A1)**	