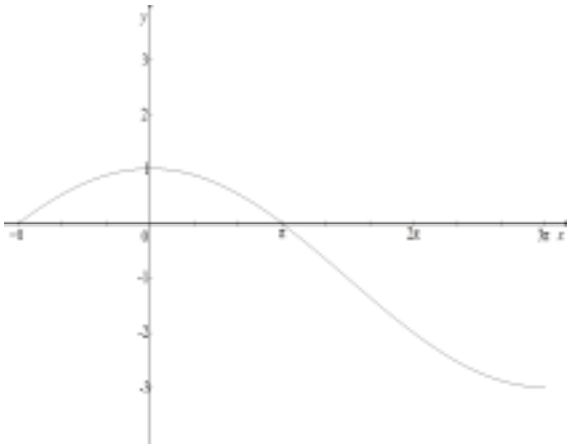
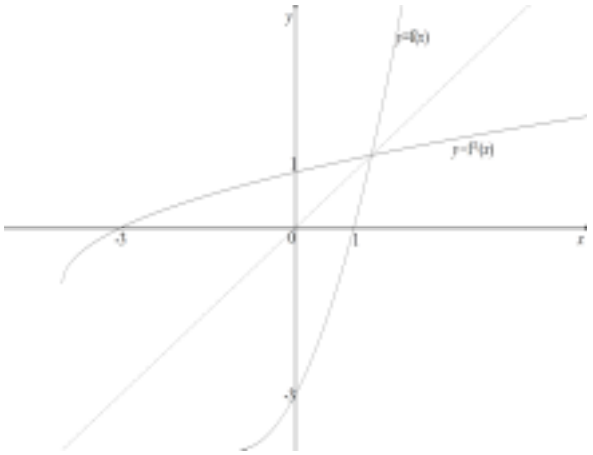
Question	Answer	Marks	Guidance
1	$2x^2-(k+4)x+(k+4)\ \ (=0)$ $2x^2+(-k-4)x+(k+4)\ \ (=0)$	**B1**	
	Discriminant: $(k+4)^2-(4\times2\times(k+4))$	**M1**	Use of discriminant to obtain 2 critical values using *their* 3 term quadratic
	±4	**A1**	For critical values
	$k<-4\ \ k>4$	**A1**	
2(a)	$y=-\frac{1}{2}(x+5)(x+1)(x-2)$	**3**	**B1** for negative soi **B1** for $\frac{1}{2}$ soi **B1** for $(x+5)(x+1)(x-2)$ or $x^3+4x^2-7x-10$
2(b)	$-5<x<-1$	**B1**	
	$x>2$	**B1**	
3(a)	2	**B1**	
3(b)	6π or 1080^o	**B1**	
3(c)		**3**	**B1** for passing through $(-\pi,\ 0)$ and $(3\pi,\ -3)$ – must be a curve **B1** for correct shape with max on y-axis and a min at $x=3\pi$ **B1** for passing through $(0,\ 1)$ and $(\pi,\ 0)$ only on the positive x-axis
4(a)	$a+6d=158$ $a+9d=149$	**B1**	For both equations, may be implied by a correct a and d
	$d=-3,$	**B1**	
	$a=176$	**B1**	

Question	Answer	Marks	Guidance
4(b)	$\frac{n}{2}\left(352+(n-1)(-3)\right) \quad (<0)$	**M1**	For correct attempt at sum formula with *their a* and *their d*,
	$\frac{355}{3}$ or 118.3 oe	**A1**	
	119	**A1**	
5	$x^5+10x^3+40x+\ldots$	**3**	**M1** for attempt to expand $\left(x+\frac{2}{x}\right)^5$, with at least 2 correct terms **A1** for $10x^3$ **A1** for $40x$
	Term in x^2 : $(1\times40)-(3\times10)$	**M1**	For $(1\times\textit{their } 40)\pm(3\times\textit{their } 10)$
	10	**A1**	
6(a)	It is a one-one function because of the given restricted domain or because $x \geqslant -1$	**B1**	
6(b)		**4**	**B1** for $y=\text{f}(x)$ for $x>-1$ only **B1** for 1 on x-axis and –3 on y-axis for $y=\text{f}(x)$ **B1** for $y=\text{f}^{-1}(x)$ as a reflection of $y=\text{f}(x)$ in the line $y=x$, maybe implied by intercepts with axes **B1** for 1 on y-axis and –3 on x-axis for $y=\text{f}^{-1}(x)$