Question	Answer	Marks	Guidance
5	**Either** Maximum when $\sin\frac{x}{3}=1$ or minimum when $\sin\frac{x}{3}=-1$	**M1**	For recognition that value of maximum or minimum is necessary
	$c=9$	**A1**	
	$c=-1$	**A1**	
	or $\frac{\mathrm{d}y}{\mathrm{d}x}=\frac{5}{3}\cos\frac{x}{3}$ When $\frac{\mathrm{d}y}{\mathrm{d}x}=0$, $\sin\frac{x}{3}=+1$ or -1	**(M1)**	For differentiation, equating to zero to obtain values for $\sin\frac{x}{3}$
	$c=9$	**(A1)**	
	$c=-1$	**(A1)**	
6(a)	$0=-\frac{5}{4}+\frac{a}{4}+5+b$	**M1**	For use of the factor theorem
	$-24=-10+a+10+b$	**M1**	For use of the remainder theorem
	$a+4b=-15$ $a+b=-24$ leading to	**M1**	**Dep** on both previous **M** marks for solution of *their* equations without using a calculator
	$a=-27$, $b=3$	**A1**	
6(b)	$(2x+1)(5x^2\ldots\ldots\ldots+\textit{their}\ \ b)$	**M1**	Allow for observation or algebraic long division. *Their a* and *b* must be integers.
	$(2x+1)(5x^2-16x+3)$	**A1**	
	$(2x+1)(5x-1)(x-3)$	**2**	**M1** for attempt to factorise *their* 3-term quadratic **A1** all correct from fully correct working
6(c)	3	**B1**	**FT** on *their* (integer) *b*
7(a)(i)	$\mathbf{b}-\mathbf{a}$	**B1**	
7(a)(ii)	$\mathbf{c}-\mathbf{b}$	**B1**	

Question	Answer	Marks	Guidance
7(a)(iii)	$n\overrightarrow{AB} = m\overrightarrow{BC}$	**M1**	For substitution of *their* **(i)** and **(ii)** into $n\overrightarrow{AB} = m\overrightarrow{BC}$
	$n\mathbf{a} + m\mathbf{c} = (m+n)\mathbf{b}$	**A1**	For correct manipulation to obtain the **given answer**
7(b)	$2\lambda - 4\mu + 4 = 4\lambda + 4$ or $\lambda + 7\mu - 7 = -2\lambda - 2$	**M1**	For equating like components at least once, allow unsimplified
		M1	**Dep** for solving *their* equations to obtain both λ and μ
	$\mu = 5$	**A1**	
	$\lambda = -10$	**A1**	
8(a)	**Either** Starting with a 6: 120 ways	**B1**	May be implied by final answer
	Starting with 5, 7 or 9: 540 ways	**B1**	May be implied by final answer
	Total 660	**B1**	
	Or Alternative 1 Ending with a 6: 180 ways	**(B1)**	May be implied by final answer
	Ending with 0 or 4: 480ways	**(B1)**	May be implied by final answer
	Total 660	**(B1)**	
	Or Alternative 2 11 ways of obtaining even 5-digit numbers which start with 5, 6, 7, 9	**(B1)**	For $11 \times k$ May be implied by final answer
	${}^5P_3$ ways of arranging remaining 3 digits: 60	**(B1)**	For $m \times 60$ where m is from an attempt to list all cases for first and last digits May be implied by final answer
	$11 \times 60 = 660$	**(B1)**	
	Or Alternative 3 Total arrangements ${}^7P_5$ minus (all odds + evens starting with 1 + evens starting with 0 or 4) = 2520 – (1440 + 180 + 240)	**(B2)**	For 2520 – (1440 + 180 + 240)
	660	**(B1)**	