Question	Answer	Marks	Guidance
7(a)	$p\left(-\frac{1}{2}\right): -\frac{a}{8}+\frac{3}{4}-\frac{b}{2}-12=0$ $p(3): 27a+27+3b-12=105$	**M1**	For attempt at an equation using either $p\left(-\frac{1}{2}\right)$ or $p(3)$
	$a+4b=-90$	**A1**	Allow equivalent with constants collected
	$9a+b=30$	**A1**	Allow equivalent with constants collected
	$a=6, b=-24$	**2**	**M1** for attempt to solve *their* equations, dep on first M mark **A1** for both
7(b)	$(2x+1)(3x^2-12)$	**2**	**B1** for $3x^2$ **B1** for -12 and no extra term in x
7(c)	$x=-\frac{1}{2}$	**B1**	
	$x=\pm 2$	**B1**	Dep on both B marks in part (b)
8(a)	$\begin{pmatrix}-20\\48\end{pmatrix}$	**B1**	
8(b)	$\begin{pmatrix}-20\\48\end{pmatrix}t$	**B1**	Follow through on *their* (a)
8(c)	$\begin{pmatrix}12\\8\end{pmatrix}+\begin{pmatrix}-25\\45\end{pmatrix}t$ oe	**B1**	
8(d)	$\begin{pmatrix}12\\8\end{pmatrix}+\begin{pmatrix}-5\\-3\end{pmatrix}t$ oe	**B1**	
8(e)	$\lvert\overrightarrow{PQ}\rvert^2=(12-5t)^2+(8-3t)^2$	**M1**	Attempt to find modulus of *their* (d) which must contain terms in t
	$\lvert\overrightarrow{PQ}\rvert=\sqrt{144-120t+25t^2+64-48t+9t^2}$ $PQ=\sqrt{34t^2-168t+208}$	**A1**	Must see correct expansion leading to given answer.

Question	Answer	Marks	Guidance
8(f)	$34t^2 - 168t + 204 = 0$	**M1**	For dealing with square root correctly and attempt to solve a 3 term quadratic equation
	2.15 only	**A1**	
9(a)(i)	360	**B1**	
9(a)(ii)	60	**B1**	**FT** on *their* (b)(i) divided by 6
9(a)(iii)	A complete plan for dealing with odd numbers and numbers greater than 7000, see below	**M1**	Must be considering each case
	Starts with 8 and ends with odd = 48	**B1**	
	Starts with 7 or 9 and ends with odd = 72	**B1**	
	120	**A1**	
	Alternative		
	Their answer to **(a)(i)** –odd numbers starting with 2–odd number starting with 3 or 5–all even numbers	**(M1**	Must be considering each case
	All even numbers =120 Odd and starting with 2 = 48 Odd and starting with 3 or 5 = 72	**2**	**B1** for 1 correct
	120	**A1)**	
9(b)	$\frac{n!}{(n-3)!3!} = 92n$	**B1**	
	$n(n-1)(n-2) = 552n$	**M1**	Attempt to simplify factorials
	$n(n^2 - 3n - 550) = 0$ $n(n-25)(n+22) = 0$	**M1**	Dep on previous M mark for expansion and simplification to a cubic or quadratic in n and attempt to solve
	$n = 25$	**A1**	For $n = 25$ only
10(a)	$\alpha + 45^\circ = 144.7^\circ,\ 324.7^\circ$ $\alpha = 99.7^\circ,\ 279.7^\circ$	**3**	**M1** for attempt to solve using a correct order of operations, may be implied by one correct solution **A1** for 1 correct solution **A1** for a second correct solution and no extras