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)	$\alpha + 45^o = 144.7^o,\ 324.7^o$ $\alpha = 99.7^o,\ 279.7^o$	**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

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Question	Answer	Marks	Guidance
10(b)(i)	$\dfrac{(\sin\theta+1)-(\sin\theta-1)}{\sin^2\theta-1}$	**M1**	For dealing with fractions
	$\dfrac{2}{-\cos^2\theta}$	**M1**	For simplification of numerator and use of the correct identity
	$-2\sec^2\theta$ $a=-2$	**A1**	Must see previous line for A1
10(b)(ii)	$-2\sec^2 3\phi=-8$ oe $\sec 3\phi=\pm 2$	**M1**	For making use of (i) and attempt to simplify in terms of 3ϕ
	$\cos 3\phi=\pm\dfrac{1}{2}$	**A1**	
	$3\phi=-\dfrac{2\pi}{3},\ -\dfrac{\pi}{3},\ \dfrac{\pi}{3},\ \dfrac{2\pi}{3}$ $\phi=-\dfrac{2\pi}{9},\ -\dfrac{\pi}{9},\ \dfrac{\pi}{9},\ \dfrac{2\pi}{9}$ or $\pm 0.349,\ \pm 0.698,$	**3**	Dep **M1** for attempt to solve, may be implied by one correct solution **A1** for each pair of correct solutions
11	$\left[\ln(2x+3)+\ln(3x-1)-\ln x\right]_1^a$	**2**	**B1** for 1 term correct **B1** all correct
	$\left(\ln(2a+3)+\ln(3a-1)-\ln a\right)$ $-(\ln 5+\ln 2)$	**M1**	Correct substitution of limits, dep on first B1, ignore equality Must have 3 terms involving x
	$\ln\dfrac{(2a+3)(3a-1)}{10a}=\ln 2.4$	**M1**	For use of both addition and subtraction rules, ignore equality Or for use of addition rule on each side of an equation.
	$6a^2-17a-3=0$	**A1**	
	$a=3$	**2**	**M1** for solution of their quadratic **A1** for $a=3$ only