Question	Answer	Marks	Guidance
8(b)	With brothers : 126 or ${}^{9}C_{5}$	**B1**	
	Without brothers : 9 or ${}^{9}C_{8}$	**B1**	
	135	**B1**	
9(a)	$\sin^2\left(2\phi-\frac{\pi}{3}\right)=\frac{3}{4}$ soi	**B1**	
	$\phi=\frac{\pi}{3},\ \frac{\pi}{2},\ \frac{5\pi}{6}$	**3**	**M1** for a correct method of solution, may be implied by one correct solution. **A1** for a second correct solution **A1** for a third correct solution and no extra solutions within the range
9(b)	$\cot^2\theta=\frac{1}{y+1}$	**B1**	
	Attempt to use $\cot^2\theta+1=\text{cosec}^2\theta$	**M1**	For attempt to eliminate θ
	$y=\frac{1}{2x-2}-1$ oe	**2**	**Dep M1** for attempt to rearrange to obtain the required form
	Alternative $\frac{1}{\sin^2\theta}=2x-1$ **and** $y+1=\frac{\sin^2\theta}{\cos^2\theta}$	**(B1)**	
	$y+1=\frac{\frac{1}{2x-1}}{1-\frac{1}{2x-1}}$ oe	**(M1)**	For attempt to eliminate θ
	$y=\frac{1}{2x-2}-1$ oe	**(2)**	**Dep M1** for attempt to rearrange to obtain the required form
10(a)	$\frac{6(x+1)^2+4(2+3x)-2(2+3x)(x+1)}{(2+3x)(x+1)^2}$	**M1**	For dealing with the fractions, allow an extra $(x+1)$ in each of the terms in the numerator and in the denominator Allow one sign error
	$\frac{(14x+10)}{(2x+3)(x+1)^2}$	**A1**	**AG** - Must have sufficient evidence of expansion and simplification to obtain the given answer

Question	Answer	Marks	Guidance
10(b)	$\left[2\ln(2x+3)-\frac{4}{(x+1)}-2\ln(x+1)\right]$	**3**	**B1** for each term, must have the correct signs with each term Must be using part (a)
	$\left(2\ln 8-\frac{4}{3}-2\ln 3\right)-(2\ln 2-4)$	**M1**	**Dep** on at least one log term in *their* integral, for use of limits
	$\frac{8}{3}+\ln\frac{16}{9}$	**2**	**A1** for $\ln\frac{16}{9}$ **A1** for $\frac{8}{3}$