Question	Answer	Marks	Partial Marks
9(c)	May work ***consistently*** in n throughout but must conclude in k to earn the final mark		
	$S_{2k} = \frac{2k}{2}\{10 + (2k-1)4\}$ soi	**B1**	**FT** *their a* and *their d*
	$\frac{2k}{2}\{10 + (2k-1)4\} - \frac{k}{2}\{10 + (k-1)4\}$ soi	**M1**	**FT** *their a* and *their d* ; condone at most one error
	Simplifies as far as e.g. $8k^2 + 6k - (3k + 2k^2)$ or $8k^2 + 6k - 3k - 2k^2$	**A1**	
	Correct completion to given answer: $6k^2 + 3k = 3k(1 + 2k)$	**A1**	
	Alternative method		
	$\frac{2k}{2}\{2a + (2k-1)d\}$ **and** a = *their* 5 and d = *their* 4 substituted at some point	**(B1)**	
	$ak - \frac{d}{2}k + \frac{3}{2}dk^2$ oe	**(M1)**	condone at most one error
	$5k - \frac{4}{2}k + \frac{3}{2} \times 4 \times k^2$	**(A1)**	
	Correct completion to given answer: $6k^2 + 3k = 3k(1 + 2k)$	**(A1)**	
10(a)	$[f'(x) =] 12x^2 - 8x - 15$	**M2**	**M1** for any two terms correct or $12x^2 - 8x - 15 + c$
	$y = 3$ and $f'(1) = -11$	**A1**	
	$[m_{\perp} =] \frac{1}{11}$ soi	**M1**	**FT** $\frac{-1}{\textit{their}\, f'(1)}$
	$y - 3 = \frac{1}{11}(x-1)$ oe, isw	**A1**	**FT** *their* $m_{\perp}$ and *their* 3, provided *their* $3 \neq 1$ or 0 or -11

Question	Answer	Marks	Partial Marks
10(b)	[f(–2) =] –32 – 16 + 30 + 18 = 0 or [f(–a) =] –4a^3 – 4a^2 + 15a + 18 and shows this to be 0 when a = 2 or uses algebraic long division or synthetic division to show that x + 2 is a factor of f(x) or that a – 2 is a factor of f(–a)	**M1**	Method must be seen and be fully correct with no clear evidence of calculator use
	a = 2	**A1**	as the only value of a
	Uses (x + 2) is a factor to find the correct quadratic factor 4x^2 – 12x + 9	**B2**	**B1** for any two out of three terms correct
	Correctly solves *their*(4x^2 – 12x + 9) (x + 2) = 0 or correctly factorises *their*(4x^2 – 12x + 9) (x + 2)	**M1**	**dep** on using a quadratic factor that has earned at least **B1;** method must be seen; **M0** if *their* quadratic factor does not have real roots
	x = –2 or 1.5	**A1**	**dep** on **M1 B2 M1**

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