Question	Answer	Marks	Partial Marks
10(c)	$g(x) = f^{-1}(e^{2x})$ soi or $g(x) = -\sqrt{\ln e^{2x} - 3}$	**M1**	**FT** *their* expression for f^{-1}
	$-\sqrt{2x-3}$	**A1**	If 0 scored, allow **SCB1** for $-\sqrt{2x-3}$ found from solving $(g(x))^2 + 3 = 2x$ and using existence of composite functions to deduce that the square root must be negative
11	$2^n + n \times 2^{n-1} \times \frac{x}{2} + \frac{n(n-1)}{2[!]} \times 2^{n-2} \times \left(\frac{x}{2}\right)^2$ soi	**B1**	implied by three correct equations or e.g. $2^n + {}^nC_1 \times 2^{n-1} \times \frac{x}{2} + {}^nC_2 \times 2^{n-2} \times \left(\frac{x}{2}\right)^2$ **and** sight of ${}^nC_1 = n$ **and** ${}^nC_2 = \frac{n(n-1)}{2[!]}$ clearly in the working
	Forms three correct equations e.g. $b = 2^n$ $ab = n(2^{n-2})$ or $ab = n\frac{(2^{n-1})}{2}$ $\frac{9}{8}ab = n(n-1)(2^{n-5})$ or $\frac{9}{8}ab = \frac{n(n-1)}{2}\frac{(2^{n-2})}{2^2}$ OR finds e.g. $a = \frac{n}{4}$ and $\frac{9}{8}a = \frac{n(n-1)}{32}$ OR finds e.g. $ab = n \times \frac{b}{2} \times \frac{1}{2}$ and $\frac{9}{8}ab = \frac{n(n-1)}{2} \times \frac{b}{4} \times \frac{1}{4}$	**B3**	**B2** for any two of three correct equations or **B1** for any one of three correct equations **OR B2 for** $a = \frac{n}{4}$ or $\frac{9}{8}a = \frac{n(n-1)}{32}$ oe or $ab = n \times \frac{b}{2} \times \frac{1}{2}$ or $\frac{9}{8}ab = \frac{n(n-1)}{2} \times \frac{b}{4} \times \frac{1}{4}$ oe
	Finds a correct equation in n soi e.g. $n^2 - 10n = 0$ or $n - 1 = 9$ or $10n = n^2$ or $\frac{n}{4} = \frac{n(n-1)}{36}$ OR Finds a correct equation in a soi e.g. $16a^2 - 40a = 0$	**B1**	
	$n = 10$ $a = \frac{5}{2}$ oe $b = 1024$	**B3**	**B1** for each

© Cambridge University Press & Assessment 2024