Question	Answer	Marks	Partial Marks
8(a)(iii)	$5! \times 8 \times 7!$ oe	**M1**	
	4 838 400 oe	**A1**	
8(b)(i)	${}^{9}C_{3}$	**M1**	
	84	**A1**	
8(b)(ii)	${}^{3}C_{1} \times {}^{4}C_{1} \times {}^{5}C_{1}$ oe	**M1**	
	60	**A1**	
9(a)	Identifies the correct term: ${}^{5}C_{2} \times (2k)^{3} \times \left(-\frac{1}{k}\right)^{2}$ $[\times x^{2}]$ oe, soi	**B1**	
	$10 \times \frac{8k^{3}}{k^{2}} = 160$ soi	**M1**	**FT** only for correct term with bracketing errors; condone one slip in simplification
	$k = 2$ nfww	**A1**	
9(b)(i)	$1 + 18x + 135x^{2}$	**B2**	**B1** for any 2 terms correct or for all 3 correct terms listed but not summed or **M1** for a correct unsimplified expansion e.g. : $1 + 6(3x) + 15(3x)^{2}$
9(b)(ii)	Uses constant/coefficient of x to find $a = -2$ only	**B2**	**B1** for both $a = 2$ and -2 or for both $a = \frac{17}{9}$ and -2
	$b = 469$ only	**B1**	**FT** *their* calculated value of a
10(a)(i)	Range f^{-1}: $0.5 \leqslant f^{-1} \leqslant 1.5$	**B1**	
	Domain f^{-1}: $0 \leqslant x \leqslant \frac{2\sqrt{2}}{3}$ oe	**B2**	**B1** for 0 and $\frac{2\sqrt{2}}{3}$ in an incorrect inequality or for $x \geqslant 0$ or $x \leqslant \frac{2\sqrt{2}}{3}$

Question	Answer	Marks	Partial Marks
10(a)(ii)	Correctly collects terms ready to factorise e.g. $4x^2 - 4x^2y^2 = 1$ or $4y^2x^2 - 4y^2 = -1$ or simplifies to subject in one term only e.g. $\frac{1}{4y^2} = 1 - x^2$ or $-\frac{1}{4x^2} = y^2 - 1$ oe	**M1**	
	Correctly factorises and/or rearranges at least as far as: $x^2 = \frac{1}{4 - 4y^2}$ or $y^2 = \frac{-1}{4x^2 - 4}$ oe	**M1**	**FT** only if of equivalent difficulty
	$\left[f^{-1}(x) =\right] \sqrt{\frac{1}{4 - 4x^2}}$ or $[y =] \sqrt{\frac{-1}{4x^2 - 4}}$ oe, isw	**A1**	
10(b)	Correct order of composition: $gf(x) = e^{\left(\frac{\sqrt{4x^2-1}}{2x}\right)^2}$	**M1**	
	$gf(x) = e^{\left(1 - \frac{1}{4x^2}\right)}$ isw	**A1**	
11(a)(i)	$\frac{(10x-1)^{-5}}{-5 \times 10}(+c)$ isw	**B2**	**B1** for $k\frac{(10x-1)^{-5}}{-5}(+c)$, where $k \neq \frac{1}{10}$
11(a)(ii)	$\int\left(4x^5 + 20x^2 + \frac{25}{x}\right)dx$	**B1**	
	$\frac{4}{6}x^6 + \frac{20}{3}x^3 + 25\ln x + c$	**B2**	**B1** for any 3 terms correct
11(b)(i)	$3\sec^2(3x+1)$	**B2**	**B1** for $k\sec^2(3x+1)$ where $k \neq 3$