Question	Answer	Marks	Partial Marks
1	Valid method to find m $m = \frac{34-9}{3-0.5}[=10]$ oe	**M1**	
	Valid method to find c, e.g. $34 = their\ 10 \times 3 + c$	**M1**	
	$\sqrt[4]{y} = (their 10)\frac{1}{x} + their 4$	**M1**	
	$y = \left(\frac{10}{x} + 4\right)^4$ oe, cao	**A1**	
2(a)	$9\left(x - \frac{2}{3}\right)^2 + 1$ oe	**B3**	**B1** for each of p, q, r correct in correctly formatted expression; allow correct equivalent values If **B0** then **SC2** for $9\left(x - \frac{2}{3}\right) + 1$ or **SC1** for correct values but other incorrect format
2(b)	$their\left(\frac{2}{3}, 1\right)$ oe	**B1**	**FT** *their* (a)
3(a)	Finds p (– 1)	**M1**	
	24	**A1**	
3(b)(i)	p (– 2) = 15 (– 8) + 22(4) – 15 (– 2) + 2 = 0	**B1**	
3(b)(ii)	Attempt to find the quadratic factor	**M1**	
	$15x^2 - 8x + 1$	**A1**	
	$(x + 2)(3x - 1)(5x - 1)$ oe, cao	**A1**	If zero scored, **SC1** for an answer of $(x + 2)(3x - 1)(5x - 1)$ without working.
4(a)	${}^5C_2 \times {}^8C_4$ oe	**M1**	
	700	**A1**	
4(b)	$3 \times 6!$ oe	**M1**	
	2160	**A1**	
5(a)	$4\alpha - 12 = \alpha + 3$ and $4 - \beta = -2$	**M1**	
	$\alpha = 5$	**A1**	
	$\beta = 6$	**A1**	

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Question	Answer	Marks	Partial Marks
5(b)	$\sqrt{their(\alpha+3)^2+(-2)^2}$	**M1**	
	$\frac{2\mathbf{j}-their8\mathbf{i}}{\sqrt{their68}}$	**A1**	**FT** *their* α
6	$3x^2+8x+5=kx-7$	**M1**	
	$3x^2+(8-k)x+12$ [= 0] soi	**A1**	
	$(8-k)^2-4(3)(12)$	**M1**	
	$k^2-16k-80*0$	**M1**	
	Critical values: –4 and 20 soi	**A1**	
	$-4<k<20$	**A1**	Alternative method: **M1** for $k=6x+8$ oe **M1** for $y=(6x+8)x-7$ **M1** for $3x^2+8x+5=(6x+8)x-7$ **A1** for $x=\pm2$ **A1** for $k=-4$, $k=20$ **A1** for $-4<k<20$
7(a)	$x+2y=\lg5$ or $3x+4y=\lg50$	**B1**	
	Solves *their* linear simultaneous equations	**M1**	
	$x=\lg2$ or equivalent simplified form	**A1**	
	$y=\frac{1}{2}\lg\frac{5}{2}$ or equivalent simplified form	**A1**	If **A0 A0** then **SC1** for a correct pair of unsimplified values or a correct pair of decimal values correct to at least 3sf
7(b)	$\left(x^{\frac{1}{3}}+2\right)\left(2x^{\frac{1}{3}}-5\right)$ oe	**M1**	
	$x^{\frac{1}{3}}=-2,\ \frac{5}{2}$	**M1**	
	$x=-8,\ \frac{125}{8}$	**A1**	
8(a)	$32-80x+80x^2-40x^3+10x^4-x^5$	**B3**	**B2** for any four or five terms correct or **B1** for any three terms correct or **M1** for a fully correct but unsimplified expansion

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