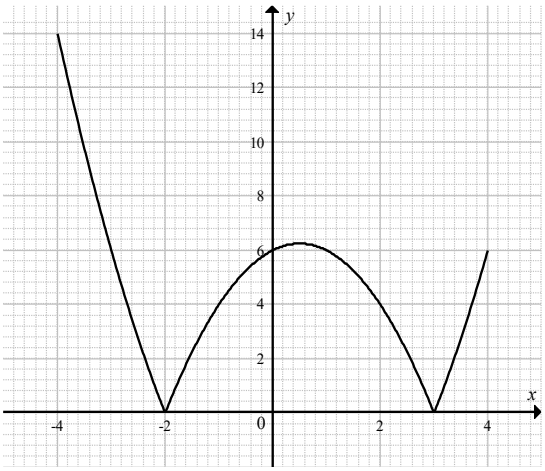
Question	Answer	Marks	Guidance
3(b)	Correct graph  	**B3**	**B2** for correct shape with cusps and intercepts at (–2, 0), (3, 0) and (0, 6) and maximum in 1st quadrant or **B1** for correct shape with cusps on x-axis and incorrect intercepts or **B1** for correct shape with no cusps (e.g. having minima) **and** intercepts at (–2, 0), (3, 0) and at (0, 6)
3(c)	*their* $-2.7 < x < -1$, $2 < x <$ *their* 3.7	**B2**	**STRICT FTB2 dep** on a graph **with correct intercepts** earning at least **B1** in **part (b)** **and** their curve crossing $y = 4$ in four places **STRICT FTB1** for either '*their* $-2.7 < x < -1$' or ' $2 < x <$ *their* 3.7' OR **B1 FT** for *their* 4 critical values providing at least **B1** awarded for **part (b)** soi
4(a)(i)	$\frac{1}{5}e^{5x-2}(+c)$	**2**	**B1** for ke^{5x-2} where k is a non-zero constant
4(a)(ii)	$-\frac{1}{3}\ln(4-3x)(+c)$	**2**	**B1** for $-\frac{1}{3}\ln 4-3x$ or $kln(4-3x)$ where k is a non-zero constant
4(b)	$2\tan\left(\frac{1}{2}x\right)$	**M2**	**M1** for $k\tan\left(\frac{1}{2}x\right)$ where k is a non-zero constant
	Fully justified completion to given answer e.g. $2\tan\frac{\pi}{4}-2\tan\frac{\pi}{6}=2\left(1-\frac{\sqrt{3}}{3}\right)$	**A1**	Or $2(\tan\frac{\pi}{4}-\tan\frac{\pi}{6})=2\left(1-\frac{\sqrt{3}}{3}\right)$
5(a)	60 480 Final answer	**B1**	

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Question	Answer	Marks	Guidance
5(b)	20 160 Final answer	**2**	**M1** for $3\times {}^{8}P_{5}$ or $3\times8\times7\times6\times5\times4$ or $\frac{1}{3}\times {}^{9}P_{6}$ oe
5(c)	16 800 Final answer	**3**	**M1** for starts 7 then 5 or 6 or 8 or 9: 3360 **M1** for starts 8, 9: 13 440 OR **M2** *their***(b)** – 3360 or **M1** for starts 7 then 1 or 2 or 3 or 4: 3360
6	$3x+4=2x^2+8x+1$ oe	**M1**	Eliminates one unknown
	$2x^2+5x-3[=0]$ or $-2x^2-5x+3$ $[=0]$	**A1**	Writes in solvable form
	$(2x-1)(x+3)$ or $(-2x+1)(x+3)$ oe	**M1**	Uses quadratic formula or factorises *their* 3-term quadratic
	$\left(\frac{1}{2}, \frac{11}{2}\right)$ (−3, −5) oe	**A1**	
	Equation of *their* perpendicular bisector: $y-\frac{1}{4}=-\frac{1}{3}\left(x+\frac{5}{4}\right)$ or $y=-\frac{1}{3}x-\frac{1}{6}$ oe	**M3**	**FT** *their* midpoint and perpendicular gradient from correct use of *their*(0.5, 5.5) and *their* (−3, −5) **M1 FT** for midpoint: (−1.25, 0.25) or $\left(\frac{their0.5+their(-3)}{2}, \frac{their5.5+their(-5)}{2}\right)$ **M1 FT** for perpendicular gradient: $m_{\perp}=\frac{-1}{\frac{their(-5)-their5.5}{their(-3)-their0.5}}$ oe or $-\frac{1}{3}$ OR **M1 FT** for equating lengths $(x+3)^2+(y+5)^2=(x-0.5)^2+(y-5.5)^2$ **M1 FT** for expanding soi $x^2+y^2+6x+10y+34=$ $x^2+y^2-x-11y+30.5$

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