Question	Answer	Marks	Guidance
1	Finds by elimination $3y+\sqrt{7}y=4$ oe or substitutes $x=11-3y$ into $x-\sqrt{7}y=7$ oe OR Finds by elimination $3y+\sqrt{7}y=21+11\sqrt{7}$ oe or substitutes $y=\frac{11-x}{3}$ into $x-\sqrt{7}y=7$ oe	**M1**	
	$y=\frac{4}{3+\sqrt{7}}$ or $x=\frac{21+11\sqrt{7}}{3+\sqrt{7}}$	**A1**	
	$y=\frac{4}{3+\sqrt{7}}\times\frac{3-\sqrt{7}}{3-\sqrt{7}}$ oe or $x=\frac{21+11\sqrt{7}}{3+\sqrt{7}}\times\frac{3-\sqrt{7}}{3-\sqrt{7}}$ oe	**M1**	**FT** *their* value of x or y providing of equivalent difficulty
	$y=6-2\sqrt{7}$ and $x=6\sqrt{7}-7$	**A2**	**A1** for either and no extra values
2	$2x^3+3x^2-29x+30[=0]$	**B1**	
	Uses a correct factor $x-2$ or $x+5$ to find a quadratic factor with at least 2 terms correct	**M1**	
	$(x-2)\rightarrow(2x^2+7x-15)\quad[=0]$ or $(x+5)\rightarrow(2x^2-7x+6)\quad[=0]$	**A1**	
	Factorises or solves *their* 3-term quadratic: $(x+5)(2x-3)$ [= 0] or $(x-2)(2x-3)$ [= 0] or $[x=]\frac{-7\pm\sqrt{7^2-4(2)(-15)}}{2(2)}$ or $\frac{7\pm\sqrt{(-7)^2-4(2)(6)}}{2(2)}$	**M1**	**dep** on previous **M1**
	$x = 2, -5, 1.5$	**A1**	

Question	Answer	Marks	Guidance
3(a)	$\frac{dy}{dx} = \frac{1}{2}(1+3x)^{-\frac{1}{2}} \times 3$ oe, isw	**B2**	**B1** for $\frac{dy}{dx} = \frac{1}{2}(1+3x)^{-\frac{1}{2}} \times ...$ or $\frac{dy}{dx} = \frac{1}{2}(...)^{-\frac{1}{2}} \times 3$ or $\frac{dy}{dx} = their\ \frac{1}{2}(1+3x)^{\left(their\frac{1}{2}\right)-1} \times 3$ or $\frac{dy}{dx} = k(1+3x)^{-\frac{1}{2}} \times 3$, k is a constant, $k \neq \frac{1}{2}$
	$m_{tangent} = \frac{3}{8}$ or 0.375 or $m_{normal} = \frac{-2}{3(1+3x)^{-\frac{1}{2}}}$ oe	**B1**	**FT** *their* $\frac{dy}{dx}$ if necessary providing at least **B1** previously awarded
	$\left(their\frac{dy}{dx}\right) = \frac{3}{8}$ or $\left(their\left(-\frac{dx}{dy}\right)\right) = -\frac{8}{3}$	**M1**	**FT** *their* $\frac{dy}{dx}$ if necessary providing at least **B1** previously awarded
	(5, 4)	**A1**	
3(b)	$m_{normal} = -\frac{10}{3}$	**B1**	
	$y - 5 = -\frac{10}{3}(x - 8)$ or $y = \frac{-10}{3}x + c$ and $5 = \left(\frac{-10}{3}\right)(8) + c$ oe soi	**M1**	**FT** *their* m_{normal}
	$y = -\frac{10}{3}x + \frac{95}{3}$	**A1**	**FT** *their* m_{normal}
4(a)	$(3x + 1)\log 2 = (x - 2)\log 5$ oe	**B1**	
	$(3\log 2 - \log 5)x = -\log 2 - 2\log 5$	**M1**	**FT** if of equivalent difficulty
	$x = -8.32$	**A1**	