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**	