Question	Answer	Marks	Guidance
8	$\left(\text{f}'(x)=\right)\ k(3x+5)^{\frac{1}{3}}\ (+c)$	**M1**	
	$\left(\text{f}'(x)=\right)\ (3x+5)^{\frac{1}{3}}\ (+c)$	**A1**	Allow unsimplified
	$\left(\text{f}'(1)=\right)\ 6=(3+5)^{\frac{1}{3}}+c$	**M1**	**Dep M1** for use of given condition
	$\text{f}'(x)=(3x+5)^{\frac{1}{3}}+4$ soi	**A1**	
	$m(3x+5)^{\frac{4}{3}}$	**M1**	
	$\left(\text{f}(x)=\right)\ m(3x+5)^{\frac{4}{3}}+cx+d$	**M1**	**Dep M1, FT** on t*heir c*
	$\left(\text{f}(1)=\right)\ 20 = m(8)^{\frac{4}{3}}+c+d$	**M1**	**Dep M1, FT** on t*heir c*
	$\left(\text{f}(x)=\right)\ \frac{1}{4}(3x+5)^{\frac{4}{3}}+4x+12$	**A1**	
9(a)	$\frac{\text{d}y}{\text{d}x}=\frac{(x+1)\left(-3\text{e}^{-3x+2}\right)-\text{e}^{-3x+2}}{(x+1)^2}$	**3**	**B1** for -3e^{-3x+2} **M1** for correct attempt at differentiation of a quotient **A1** all terms apart from -3e^{-3x+2} correct
	$\frac{\text{e}^{-3x+2}(-3x-4)}{(x+1)^2}$	**2**	**M1 dep** for attempt to obtain the given form, allow sign errors
9(b)	$\text{e}^{-3x+2}\neq 0$	**B1**	
	$x=-\frac{4}{3}$	**B1**	**FT** on *their* $-3x-4$ $\frac{\text{d}y}{\text{d}x}$ must be in the correct form
	$y=-3\text{e}^{6}$	**B1**	
10(a)	$ar^2=6$ $ar^7=1458$ soi	**B1**	
	$r^5=243$	**B1**	
	$r=3$	**B1**	
	$a=\frac{2}{3}$	**B1**	

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