Question Number	Scheme	Marks
4 (a)	$\frac{d^2y}{dx^2}=\frac{4}{y}\left(\frac{dy}{dx}\right)^2-3$	M1
	$\frac{d^3y}{dx^3}=-\frac{4}{y^2}\left(\frac{dy}{dx}\right)^3+\frac{8}{y}\times\frac{d^2y}{dx^2}\times\frac{dy}{dx}$	M1A1A1
	$\frac{d^3y}{dx^3}=-\frac{4}{y^2}\left(\frac{dy}{dx}\right)^3+\frac{8}{y}\left(\frac{4}{y}\left(\frac{dy}{dx}\right)^2-3\right)\left(\frac{dy}{dx}\right)$	
	$\frac{d^3y}{dx^3}=\frac{28}{y^2}\left(\frac{dy}{dx}\right)^3-\frac{24}{y}\left(\frac{dy}{dx}\right)$ *	A1* (5)
ALT	$\frac{dy}{dx}\frac{d^2y}{dx^2}+y\frac{d^3y}{dx^3}-8\frac{dy}{dx}\times\frac{d^2y}{dx^2}+3\frac{dy}{dx}=0$	M1A1A1
	$\frac{d^3y}{dx^3}=\frac{1}{y}\left(7\frac{dy}{dx}\right)\left(\frac{4}{y}\left(\frac{dy}{dx}\right)^2-3\right)-\frac{3}{y}\frac{dy}{dx}$	M1
	$\frac{d^3y}{dx^3}=\frac{28}{y^2}\left(\frac{dy}{dx}\right)^3-\frac{24}{y}\left(\frac{dy}{dx}\right)$ *	A1* (5)
4(b)	At $x=0$ $\frac{d^2y}{dx^2}=\frac{4}{8}(1)^2-3=-\frac{5}{2}$ oe	B1
	$\frac{d^3y}{dx^3}=\frac{28}{64}\times1^3-\frac{24}{8}\times1=-\frac{41}{16}$	M1
	$y=8+x-\frac{5}{2}\times\frac{x^2}{2!}-\frac{41}{16}\times\frac{x^3}{3!}+...$	M1
	$y=8+x-\frac{5}{4}x^2-\frac{41}{96}x^3+...$	A1 (4) [9]