Question Number	Scheme	Marks
1(a)	$\left(\frac{\mathrm{d}y}{\mathrm{d}x}=\right) \ldots x^{1}+\ldots x^{-\frac{3}{2}}+\ldots x^{-2}$	M1
	$\left(\frac{\mathrm{d}y}{\mathrm{d}x}=\right) \ \frac{2}{3}x \ -2x^{-\frac{3}{2}} \ -\frac{8}{3}x^{-2}$	A1A1A1
		(4)
(b)	$\frac{\mathrm{d}y}{\mathrm{d}x}="\frac{2}{3}"\times 4-"2"\times 4^{"-\frac{3}{2}"}-"\frac{8}{3}"\times 4^{"-2"}=\frac{9}{4}$	M1
	$\frac{9}{4}\rightarrow -\frac{4}{9}$	M1
	$y-3="-\frac{4}{9}"(x-4)$	dM1
	$4x+9y-43=0$	A1
		(4)
		(8 marks)

(a)

M1 Reduces the power by 1 on any of the following terms

$\ldots x^{2}\rightarrow \ldots x^{1}, \ldots x^{-\frac{1}{2}}\rightarrow \ldots x^{-\frac{3}{2}}, \ldots x^{-1}\rightarrow \ldots x^{-2}, \ 5\rightarrow 0$

A1 One of $\frac{2}{3}x$, $-2x^{-\frac{3}{2}}$, $-\frac{8}{3}x^{-2}$ or exact simplified equivalent terms eg $\frac{-2}{\left(\sqrt{x}\right)^{3}}$ or $-\frac{8}{3x^{2}}$ or $-2.\dot{6}x^{-2}$

Condone $\frac{2}{3}x^{1}$ and condone double signs such as $+-2x^{-\frac{3}{2}}$ The terms do not need to be on the same line for this mark.

A1 Two of $\frac{2}{3}x$, $-2x^{-\frac{3}{2}}$, $-\frac{8}{3}x^{-2}$ or exact simplified equivalent terms eg $\frac{-2}{\left(\sqrt{x}\right)^{3}}$ or $-\frac{8}{3x^{2}}$.

Condone $\frac{2}{3}x^{1}$ and condone double signs such as $+-2x^{-\frac{3}{2}}$. The terms do not need to be on the same line for this mark.

A1 $\frac{2}{3}x \ -2x^{-\frac{3}{2}} \ -\frac{8}{3}x^{-2}$ or exact simplified equivalent all on one line eg $\frac{2}{3}x-\frac{2}{\left(\sqrt{x}\right)^{3}} \ -\frac{8}{3x^{2}}$.

Do not allow $\frac{2}{3}x^{1} \ -2x^{-\frac{3}{2}} \ -\frac{8}{3}x^{-2}$ or double signs and do not isw in this part (including rounding decimals).