(b)	$\lvert x\rvert$ „ $\frac{4}{5}$	B1
		(1)
(c)(i)	$2-\frac{5}{4}x-\frac{25}{64}x^2-\frac{125}{512}x^3$	B1ft
		(1)
(c)(ii)	$"2"+"2"+"-\frac{25}{64}"x^2+"-\frac{25}{64}"x^2=4-\frac{25}{32}x^2$	M1A1
		(2)
		(9 marks)

(b)

B1: $\lvert x\rvert$ „ $\frac{4}{5}$ or $\lvert x\rvert<\frac{4}{5}$ or accept strict or non-strict inequalities at either end e.g.

$-\frac{4}{5}<x<\frac{4}{5}$, $-\frac{4}{5}$ „ $x<\frac{4}{5}$, $-\frac{4}{5}<x$ „ $\frac{4}{5}$, $\frac{4}{5}>x>-\frac{4}{5}$, $x>-\frac{4}{5}$ and $x<\frac{4}{5}$

or interval notation e.g. $\left(-\frac{4}{5},\frac{4}{5}\right)$, $\left[-\frac{4}{5},\frac{4}{5}\right]$, $\left[-\frac{4}{5},\frac{4}{5}\right)$, $\left(-\frac{4}{5},\frac{4}{5}\right]$

(c)(i)

B1ft: $2-\frac{5}{4}x-\frac{25}{64}x^2-\frac{125}{512}x^3$ (follow through their (a))

For their $A+Bx+Cx^2+Dx^3$ in part (a) they must obtain $A-Bx+Cx^2-Dx^3$ where *A, B, C* and *D* are non-zero for this mark even if they make a re-start.

(c)(ii)

M1: Adds their $A+Bx+Cx^2+Dx^3$ from part (a) to $A-Bx+Cx^2-Dx^3$ to give $a+bx^2$ or obtains values for *a* and *b*.
May be implied by their answer/values if no incorrect working is seen.

A1: Cao and **cso** $4-\frac{25}{32}x^2$ o.e. e.g. $4-\frac{50}{64}x^2$ Allow $4+-\frac{25}{32}x^2$

This must follow fully correct work in (a) and (c).
Apply isw once the correct answer is seen.

Question Number	Scheme	Marks
5	$4y^2 \rightarrow 8y\dfrac{dy}{dx}$	M1
	$e^{xy} \rightarrow \left(y + x\dfrac{dy}{dx}\right)e^{xy}$ or e.g. $e^{xy} \rightarrow ye^{xy} + x\dfrac{dy}{dx}e^{xy}$	M1
	$2 + 8y\dfrac{dy}{dx} = 3\left(y + x\dfrac{dy}{dx}\right)e^{xy}$	A1
	$2 = 3\times\dfrac{9}{2}\times\dfrac{dy}{dx} \Rightarrow \dfrac{dy}{dx} = \dfrac{4}{27}$	M1
	$y = \dfrac{4}{27}\left(x - \dfrac{9}{2}\right) \Rightarrow 4x - 27y - 18 = 0$	**d**M1A1
		(6)
		(6 marks)

M1: Differentiates $4y^2$ to obtain $...y\dfrac{dy}{dx}$

M1: Differentiates $3e^{xy}$ to obtain $...\left(y + x\dfrac{dy}{dx}\right)e^{xy}$ or equivalent.

Do not condone missing brackets unless they are implied by subsequent work.

A1: Fully correct differentiation $2 + 8y\dfrac{dy}{dx} = 3\left(y + x\dfrac{dy}{dx}\right)e^{xy}$ or equivalent.

Condone e.g. $\dfrac{dy}{dx} = 2 + 8y\dfrac{dy}{dx} = 3\left(y + x\dfrac{dy}{dx}\right)e^{xy}$ where the "$\dfrac{dy}{dx} =$" is their intention to differentiate.

M1: Substitutes $x = \dfrac{9}{2}$ and $y = 0$ and proceeds to find a value for $\dfrac{dy}{dx}$.

If no substitution is seen then their value must be correct for their $\dfrac{dy}{dx}$.

Must be a constant but may be in terms of e or may be a decimal.

Note that they may attempt to make $\dfrac{dy}{dx}$ the subject first e.g. $\dfrac{dy}{dx} = \dfrac{3ye^{xy} - 2}{8y - 3xe^{xy}}$

You do not need to be concerned with the details of the rearrangement.

It is dependent on having **exactly two** $\dfrac{dy}{dx}$ terms so if they had e.g.

$\dfrac{dy}{dx} = 2 + 8y\dfrac{dy}{dx} = 3\left(y + x\dfrac{dy}{dx}\right)e^{xy}$ and use all 3 $\dfrac{dy}{dx}$ terms, this scores M0

dM1: Uses their gradient at $\left(\dfrac{9}{2}, 0\right)$ with $x = \dfrac{9}{2}$ and $y = 0$ with the values correctly placed, in a correct straight line method for the tangent at P. Their gradient must be non-zero and must exist so do not allow methods leading to e.g. $\dfrac{\alpha}{0}$ where α is then used for the gradient.

If they use $y = mx + c$, they must reach as far as a value for c.

It is dependent on the previous method mark.

A1: **cso** $4x - 27y - 18 = 0$ or any integer multiple of this equation.

Note that incorrect differentiation can lead to the correct gradient and the correct answer so this mark must follow **correct work and all previous marks must be awarded.**