Question	Scheme	Marks
1	E.g $xy^2 \to (...+)2xy\dfrac{dy}{dx}$ or $x^2y \to (...+)x^2\dfrac{dy}{dx}$ but see notes.	**M1**
	$xy^2 \to y^2 + kxy\dfrac{dy}{dx}$ or $x^2y \to kxy + x^2\dfrac{dy}{dx}$	**dM1**
	$y^2 + 2xy\dfrac{dy}{dx} = 2xy + x^2\dfrac{dy}{dx}$ oe	**A1**
	$\left(x^2 - 2xy\right)\dfrac{dy}{dx} = y^2 - 2xy \Rightarrow \dfrac{dy}{dx} = \dfrac{y^2 - 2xy}{x^2 - 2xy} \Rightarrow \left.\dfrac{dy}{dx}\right\|_P = \dfrac{3^2 - 12}{2^2 - 12} = ...$ or $3^2 + 2\times2\times3\left.\dfrac{dy}{dx}\right\|_P = 2\times2\times3 + 2^2\left.\dfrac{dy}{dx}\right\|_P \Rightarrow \left.\dfrac{dy}{dx}\right\|_P = \dfrac{9-12}{4-12} = ...$	**M1**
	Tangent is $y - 3 = "\dfrac{3}{8}"(x-2)$	**dM1**
	$\Rightarrow 3x - 8y + 18 = 0$	**A1**
		(6)
		(6 marks)

Notes:

M1: For an attempt at implicit differentiation in some form. (Allow y' for $\dfrac{dy}{dx}$)

For the xy^2 look for a term $kxy\dfrac{dy}{dx}$ but condone $ky\dfrac{dy}{dx}$

For the x^2y look for a term $kx^2\dfrac{dy}{dx}$ but condone $kx\dfrac{dy}{dx}$

dM1: For attempting the product rule on either xy^2 or x^2y.

Award for $xy^2 \to y^2 + kxy\dfrac{dy}{dx}$ **or** $x^2y \to kxy + x^2\dfrac{dy}{dx}$

A1: For $y^2 + 2xy\dfrac{dy}{dx} = 2xy + x^2\dfrac{dy}{dx}$ or equivalent.

Ignore any spurious $"\dfrac{dy}{dx} = "$ in front of their equation.

M1: Attempts to find $\dfrac{dy}{dx}$ at *P*. Must substitute **both** *x* and *y* values and rearrange (but can be done in either order). Allow this mark as long as there are at least two terms in $\dfrac{dy}{dx}$ in their differentiation not including any spurious $"\dfrac{dy}{dx} = "$ There must be some correct substitution.

dM1: Uses their **non-zero** $\dfrac{dy}{dx}$ at (2, 3) to find the equation of the tangent. **Depends on previous M.**

Look for $y - 3 = "m"(x-2)$ or $y = "m"x + c$ where *m* is their attempt at the gradient at *P*, followed by attempt to find *c* using (2, 3) with the 2 and the 3 **positioned correctly.**

A1: $3x - 8y + 18 = 0$ or any non-zero integer multiple of this equation but with all terms on one side.