Question	Scheme	Marks	AOs
1(a)	$x^3 \to x^2$ or $5x \to 5$ or $x^{-1} \to x^{-2}$	M1	1.1b
	Two of $+\frac{9}{2}x^2,\ -5,\ +\frac{10}{x^2}$	A1	1.1b
	$\frac{\mathrm{d}y}{\mathrm{d}x} = \frac{9}{2}x^2 - 5 + \frac{10}{x^2}$	A1	1.1b
		(3)	
(b)	$\left(\frac{\mathrm{d}y}{\mathrm{d}x} =\right) \frac{9}{2}(-2)^2 - 5 + \frac{10}{(-2)^2} = \ldots \left(= \frac{31}{2}\right)$	M1	1.1b
	$"\frac{31}{2}" \to "-\frac{2}{31}"$	dM1	1.2
	$y - 3 = "-\frac{2}{31}"(x+2)$	dM1	1.1b
	$2x + 31y - 89 = 0$	A1	1.1b
		(4)	
			(7 marks)

Notes

(a)

M1: Reduces the power of x by one on one of the terms (indices do not need to be processed)

A1: Two correct unsimplified terms (may be given in a list)

A1: $\frac{9}{2}x^2 - 5 + \frac{10}{x^2}$ or simplified equivalent e.g. $4.5x^2 - 5 + 10x^{-2}$

(b)

M1: Attempts to find the gradient of the curve at $x = -2$

dM1: Finds the negative reciprocal of the gradient found at $x = -2$. It is dependent on the first method mark.

dM1: Attempts to find the equation of the normal using a changed gradient at $(-2, 3)$. If they use $y = mx + c$ they must proceed as far as $c = \ldots$. It is dependent on the first method mark.

A1: $2x + 31y - 89 = 0$ or any integer multiple of this equation