

Question	Scheme	Marks	AOs
3(a)	$y = x^3 - 2x^2 + 5x - 7$	M1	1.1b
	$\Rightarrow \left(\frac{dy}{dx} = \right) 3x^2 - 4x + 5$	A1	1.1b
		(2)	
(b)	y coordinate at P is 3	B1	1.1b
	$\left(\frac{dy}{dx} = \right) 3(2)^2 - 4(2) + 5 = 9$	M1	1.1b
	$y - 3 = 9(x - 2)$ or $y = 9x + c, 3 = 9 \times 2 + c \Rightarrow c = \dots$		
	$y = 9x - 15$	A1	1.1b
		(3)	

(5 marks)

Notes

Mark (a) and (b) together

(a)

M1: For $x^n \rightarrow x^{n-1}$ seen at least once $x^3 \rightarrow x^2$ or $x^2 \rightarrow x$ or $5x \rightarrow 5$ or $-7 \rightarrow 0$
Indices may be unprocessed e.g. $x^3 \rightarrow x^{3-1}$ or $x^2 \rightarrow x^{2-1}$ or $5x \rightarrow 5x^0$
Do not withhold the mark if other powers on other terms are increased by 1

A1: Correct simplified expression with indices processed $3x^2 - 4x + 5$
Do not allow x^1 for x or $5x^0$ for 5
Apply isw if necessary, once a correct answer is seen.
The " $\frac{dy}{dx} =$ " is **not** required. $3x^2 - 4x + 5 + c$ scores A0

(b)

B1: Correct y coordinate **which must come from a correct method if seen**. May be seen embedded in the correct position in an attempt of the equation of the tangent or seen as (2, 3)

M1: A complete method for the tangent that requires **both** of the following:

- substitutes $x = 2$ into their $\frac{dy}{dx}$ to find a value (must have scored M1 in part (a))

Look for sight of $x = 2$ embedded followed by an answer. Condone slips.

If no calculation is seen to find $\frac{dy}{dx}$ at $x = 2$ then the value of their gradient must be

correct for their $\frac{dy}{dx}$ from part (a).

- uses their value for $\frac{dy}{dx}$ with their y at $x = 2$ correctly to find the required equation.

Look for $y - "3" = "9"(x - 2)$ Do not condone sign slips for this mark.

If they use $y = mx + c$ they must proceed as far as $c = \dots$

Do not allow this mark if they use a perpendicular gradient.

This mark cannot be scored from a made up gradient and their y coordinate cannot be from an incorrect method i.e. from using their expression for $\frac{dy}{dx}$ (even if labelled as y)

If a y coordinate is stated or implied with no working it must be 3

A1: $y = 9x - 15$ (in this form) and following correct differentiation seen. isw