Question			Answer	Marks	AO	Guidance	
6			$\frac{dy}{dx} = 20x^3 + 3ax^2 + b$	**M1***	**2.1**	Attempt to differentiate (at least two terms correct)	
			$12a + b = -160$	**M1dep***	**1.1**	Substitutes $x = 2$ into their derivative and set derivative equal to zero (need not be simplified)	
				M1*	**1.1**	Attempt to integrate (all terms with powers increased by 1 and at least one term correct)	
			$\int (5x^4 + ax^3 + bx)\,dx = \frac{5x^5}{5} + \frac{ax^4}{4} + \frac{bx^2}{2} (+c)$	**A1**	**1.1**	cao (need not be simplified)	
			$\int_0^2 (5x^4 + ax^3 + bx)\,dx$ $= (2)^5 + \frac{a}{4}(2)^4 + \frac{b}{2}(2)^2 = -48$	**M1dep***	**3.1a**	Correct use of limits $x = 0$ and $x = 2$ in their integrated expression (need not be simplified) and set equal to ± 48 (oe). Needs to be in terms of a and b.	For reference (if simplified): $2a + b = -40$
			$a = -12,\ b = -16$	**A1**	**1.1**	**BC** (For reference if correct: $y = 5x^4 - 12x^3 - 16x$)	
			y-coordinate of P is -48	**A1** **[7]**	**2.2a**	cao	www