		indicated separately but any marked on sketch take precedence.	
			(2)
			Total 8

Question Number	Scheme	Notes	Marks
9	Question parts are marked separately throughout this paper (except for Q10) e.g., there are no marks in (b) for integration that is clearly an answer to (a).		
(a)	$f'(x)=30+\frac{6-5x^2}{\sqrt{x}}$ $\{f'(4)=\}30+\frac{6-5\times4^2}{\sqrt{4}}=-7$	M1: Attempts $f'(4)$ and achieves a value. Allow slips in substitution but if only a value is given it must be -7 A1: Correct value. May be implied later if uncalculated	**M1** **A1**
	$y+8=\frac{1}{7}(x-4)$ or $y=mx+c:-8=\frac{1}{7}(4)+c\Rightarrow c=...\left\{-\frac{60}{7}\right\}\Rightarrow y=...$	Uses the correct negative reciprocal of their $f'(4)\neq0$ or 1 correctly with (4, –8) to obtain a straight line equation. If $y=mx+c$ must correctly substitute, reach $c=...$ and form equation unless "$y=mx+c$" seen Allow this mark if they use their $f''(4)$	**M1**
	$\Rightarrow y=\frac{1}{7}x-\frac{60}{7}$	$y=\frac{1}{7}x-\frac{60}{7}$. This form only with exact values. Allow if *y* on one side and the two other terms on the other side.	**A1**
			(4)
(b)	$f'(x)=30+\frac{6-5x^2}{\sqrt{x}}=30+6x^{-\frac{1}{2}}-5x^{\frac{3}{2}}\Rightarrow$ $\{f(x)=\}30x+12x^{\frac{1}{2}}-2x^{\frac{5}{2}}(+c)$	M1: For $30\rightarrow30x$ or raises the power of $...x^{-\frac{1}{2}}$ or $...x^{\frac{3}{2}}$ by 1 A1: Two correct terms A1: Correct expression. $\{f(x)=\}30x+12x^{\frac{1}{2}}-2x^{\frac{5}{2}}(+c)$ No constant required. May be unsimplified but indices must be processed	**M1** **A1** **A1**
	If parts/substitution are used then award the M for $30\rightarrow30x$ otherwise integration must be completed and a correct form achieved to score any marks.		
	$-8=30(4)+12(4)^{\frac{1}{2}}-2(4)^{\frac{5}{2}}+c\Rightarrow c=...$ Substitutes (4, –8) correctly into their f(*x*) and finds value of c Allow slips after substitution but must not e.g., mix up *x* and *y* You make have to check for consistency if there is minimal working		**dM1**

	$\{f(x) \text{ or } y =\}\quad 30x+12x^{\frac{1}{2}}-2x^{\frac{5}{2}}-88$	Correct and simplified four term expression. A0 if stops at $c=-88$. Do not need to see $f(x)=...$ Condone if e.g., a spurious integration sign remains	**A1**
			(5)
			Total 9