Question	Answer	Marks	Guidance
1	$kx^{\frac{5}{2}+1}$	M1	k is any non-zero constant
	$2x^{\frac{7}{2}}$ cao	A1	
	$+ c$	A1	
		[3]	

Question	Answer	Marks	Guidance	
2	kx^{-2}	**M1***		$k \neq 0$
	$-9x^{-2}$	**A1**	may be awarded later	no marks at all for responses based on "$mx + c$"
	$+ 2x + c$	**M1***	c may appear at substitution stage	
	substitution of $x = 3$ and $y = 6$ in their expression following integration	**M1dep**	on award of *either* of previous **M1**s	eg $6 = k3^{-2} + 2\times3 + c$
	$c = 1$	**A1**	**A0** if spoiled by further working	for full marks, **must** see "$y =$" at some stage
		[5]		

Question	Answer	Marks	Guidance	
3	$\dfrac{6x^{\frac{3}{2}}}{\frac{3}{2}}$	M1*		
	$4x^{\frac{3}{2}}$	A1	may appear later	
	$- 5x + c$	B1	B0 if from $y = (6x^{\frac{1}{2}} - 5)x + c$	condone "$+ c$" not appearing until substitution
	substitution of $(4, 20)$	M1dep*		
	$[y =] 4x^{1.5} - 5x + 8$ or $c = 8$ isw	A1		
		[5]		

4	$\frac{1}{2}x^4 + 3x$	**M1**	accept unsimplified	ignore + c
	F[5] – F[2]	**M1**	at least one term correctly integrated,	condone omission of brackets
	[=327.5 − 14]		may be implied by A1	
	=313.5 o.e.	**A1**		313.5 unsupported scores 0

5	$\frac{dy}{dx} = 6x^{\frac{1}{2}} - 2$			$x^{\frac{1}{6}}$ is a mistake, not a misread
	$y = kx^{\frac{3}{2}} - 2x + c$ o.e.	**M2**	**M1** for $kx^{\frac{3}{2}}$ and **M1** for -2x + c	"y =" need not be stated at this point, but must be seen
	$y = 4x^{\frac{3}{2}} - 2x + c$ o.e.	**A1**		at some point for full marks
	correct substitution of $x = 9$ and $y = 4$ in their equation of curve	**M1** dep	dependent on at least **M1** already awarded	must see "+ c"
	$y = 4x^{\frac{3}{2}} - 2x - 86$	**A1**	allow **A1** for $c = -86$ i.s.w. if simplified equation for y seen earlier	

6	$x - \dfrac{6x^{-2}}{-2}$ o.e. their $[5 + \frac{3}{25}] - [2 + \frac{3}{4}]$ $= 2.37$ o.e. c.a.o.	**2** **M1** **A1**	M1 for 1 term correct Dependent on at least **M1** already earned i.s.w.	

7	$2x^6 + 5x$ value at 2 − value at 1 131	M2 M1 A1	M1 if one error ft attempt at integration only	4

8	attempt to integrate $3\sqrt{x} - 5$ $[y=]\ 2x^{\frac{3}{2}} - 5x + c$ subst of (4, 6) in their integrated eqn $c = 10$ or $[y=]\ 2x^{\frac{3}{2}} - 5x + 10$	M1 A2 M1 A1	A1 for two terms correct	5

9	$[y =]\ kx^{3/2}\ [+ c]$ $k = 4$ subst of (9, 105) in their eqn with c or $c = -3$	M1 A1 M1 A1	may appear at any stage must have c; must have attempted integration	4

10	$x^5/5 - 3\,x^{-1}/-1 + x$ [value at 2 − value at 1] attempted 5.7 c.a.o.	B3 M1 A1	1 each term dep't on B2	5

Question			Answer	Marks	Guidance
11			$kx^{\frac{5}{2}}$	M1	
			$k = 12$	A1	
			$+ c$	A1 **[3]**	

Question			Answer	Marks	Guidance	
12			$\dfrac{x^6}{6} + kx^{\frac{5}{2}}$	M2	M1 for each term	
			$k = 4$	A1		
			$+ c$	A1	if at least M1 earned	
				[4]		