

Question	Scheme	Marks	AOs	
9	$\int (3x^{0.5} + A) dx = 2x^{1.5} + Ax(+c)$	M1 A1	3.1a 1.1b	
	Uses limits and sets $= 2A^2 \Rightarrow (2 \times 8 + 4A) - (2 \times 1 + A) = 2A^2$	M1	1.1b	
	Sets up quadratic and attempts to solve	Sets up quadratic and attempts $b^2 - 4ac$	M1	1.1b
	$\Rightarrow A = -2, \frac{7}{2}$ <b>and</b> states that there are two roots	States $b^2 - 4ac = 121 > 0$ and hence there are two roots	A1	2.4

**(5 marks)**

**Notes:**

**M1:** Integrates the given function and achieves an answer of the form  $kx^{1.5} + Ax(+c)$  where  $k$  is a non- zero constant

**A1:** Correct answer but may not be simplified

**M1:** Substitutes in limits and subtracts. This can only be scored if  $\int A dx = Ax$  and not  $\frac{A^2}{2}$

**M1:** Sets up quadratic equation in  $A$  and either attempts to solve or attempts  $b^2 - 4ac$

**A1:** Either  $A = -2, \frac{7}{2}$  **and** states that there are two roots

Or states  $b^2 - 4ac = 121 > 0$  and hence there are two roots