6(a)	$x^2+8x-3=(Ax+B)(x+2)+C$ or $Ax(x+2)+B(x+2)+C$ $\Rightarrow A=...,B=...,C=...$ **or** $\begin{array}{r} x+6 \\ x+2\overline{)x^2+8x-3} \\ \underline{x^2+2x} \\ 6x-3 \\ \underline{6x+12} \\ -15 \end{array}$	M1	1.1b
	Two of $A=1,B=6,C=-15$	A1	1.1b
	All three of $A=1,B=6,C=-15$	A1	1.1b
		(3)	
6(b)	$\int \frac{x^2+8x-3}{x+2}\,dx = \int x+6-\frac{15}{x+2}\,dx = ...-15\ln(x+2)$	M1	1.1b
	$=\frac{1}{2}x^2+6x-15\ln(x+2) \quad (+c)$	A1ft	1.1b
	$\int_0^6 \frac{x^2+8x-3}{x+2}\,dx = \left[\frac{1}{2}x^2+6x-15\ln(x+2)\right]_0^6$ = (18 + 36 – 15ln8) – (0 + 0 – 15ln2) = 18 + 36 – (15 – 45)ln2 or e.g. $18+36+15\ln\left(\frac{2}{8}\right)$	M1	2.1
	= 54 – 30 ln2	A1	1.1b
		(4)	
			(7 marks)

Notes:

(a)

M1: Multiplies by (x + 2) and attempts to find values for A, B and C e.g. by comparing coefficients or substituting values for x. If the method is unclear, at least 2 terms must be correct on rhs.
Or attempts to divide x^2+8x-3 by x + 2 and obtains a linear quotient and a constant remainder.
This mark may be implied by 2 correct values for A, B or C

A1: Two of A = 1, B = 6, C = –15. But note that **just** performing the division correctly is insufficient and they must clearly identify their A, B, C to score any accuracy marks.

A1: All three of A = 1, B = 6, C = –15
This is implied by stating $\frac{x^2+8x-3}{x+2}=x+6-\frac{15}{x+2}$ or within the integral in (b)

(b)

M1: Integrates an expression of the form $\frac{C}{x+2}$ to obtain $k\ln(x + 2)$.
Condone the omission of brackets around the "x + 2"

A1ft: Correct integration ft on their $Ax+B+\frac{C}{x+2}$, $(A,B,C\neq 0)$ The brackets should be present around the "x + 2" unless they are implied by subsequent work.

M1: Substitutes both limits 0 and 6 into an expression that contains an x or x^2 term or both and a ln term and subtracts either way round **WITH** fully correct log work to combine two log terms (but allow sign errors when removing brackets) leading to an answer of the form a + $b$ln$c$ (a, b and c not necessarily integers)
e.g. if they expand to get –15ln8 – 15ln2 followed by -15ln16 and reach a + $b$ln$c$ then allow the M mark

A1: 54 – 30 ln2 (Apply isw once a correct answer is seen)