1.

Express $\dfrac{(x-7)(x-2)}{(x+2)(x-1)^2}$ in partial fractions.

[5]

2.

Express $\dfrac{9x^2+43x+8}{(3+x)(1-x)(2x+1)}$ in partial fractions.

[4]

END OF QUESTION paper

Mark scheme

Question			Answer/Indicative content	Marks	Part marks and guidance	
1			$$\frac{(x-7)(x-2)}{(x+2)(x-1)^2} \equiv \frac{A}{x+2} + \frac{B}{(x-1)} + \frac{C}{(x-1)^2}$$ [If no partial fractions seen anywhere, B0] $(x-7)(x-2) \equiv A(x-1)^2 + B(x+2)(x-1) + C(x+2)$ [Allow careless minor error but not algebraic method error] or any equiv identity such as $$\frac{(x-7)(x-2)}{(x-1)^2} \equiv A + \frac{B(x+2)}{(x-1)} + \frac{C(x+2)}{(x-1)^2}$$ (or even the identity on the 1ˢᵗ line), in which values of x are substituted (or cfs compared) $A = 4$, $B = -3$, $C = 2$ or $\dfrac{4}{x+2} - \dfrac{3}{x-1} + \dfrac{2}{(x-1)^2}$ ISW The 3 @ A1 are dep on the used identity being correct. Cover-up: $A = 4$, $C = 2$ score B1, B1; $B = -3$ needs M1, then A1	B1 M1 A1,1,1	**SC** $$\frac{(x-7)(x-2)}{(x+2)(x-1)^2} \equiv \frac{A}{x+2} + \frac{Bx+C}{(x-1)^2}$$ [If no partial fractions seen anywhere, B0] $(x-7)(x-2) \equiv A(x-1)^2 + (Bx+C)(x+2)$ [Allow careless minor error but not algebraic method error] or any equivalent identity (as in previous column) (or even the identity on the 1ˢᵗ line), in which values of x are substituted (or cfs compared) $A = 4$, $B = -3$, $C = 5$ or $\dfrac{4}{x+2} + \dfrac{-3x+5}{(x-1)^2}$ **Examiner's Comments** This was generally answered well though a few candidates did not show the format of the partial fractions and expected the examiner to know the meaning of the A, B and C in their solution.	B1 M1 A1 This gives max 3/5 for easier case
			Total	5		
2			$$\frac{A}{3+x} + \frac{B}{1-x} + \frac{C}{2x+1}$$ $[9x^2 + 43x + 8 \equiv]$ $A(1-x)(2x+1) + B(3+x)(2x+1) + C(3+x)(1-x)$ soi $A = 2$ $B = 5$ $C = -3$ isw	B1 M1 A1 A1	if not seen here, may be awarded at end allow sign errors only $$\frac{2}{3+x} + \frac{5}{1-x} - \frac{3}{2x+1}$$	

				A1		
				[5]	**Examiner's Comments**	
					Nearly all the candidates were familiar with this topic, and most went on to score full marks. A few slipped up with the arithmetic and obtained one or sometimes two incorrect coefficients. Those who attempted a solution by equating coefficients went astray more frequently.	
		Total		**5**		