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Partial Fractions | Past Paper Question | OCR C4 June 2013 Q(1)

Express $\frac{(x-7)(x-2)}{(x+2)(x-1)^2}$ in partial fractions. [5]

$$\frac{(x-7)(x-2)}{(x+2)(x-1)^2} \equiv \frac{A}{x+2} + \frac{B}{x-1} + \frac{C}{(x-1)^2}$$

$$\therefore (x-7)(x-2) \equiv A(x-1)^2 + B(x+2)(x-1) + C(x+2)$$

when $x=1$	when $x=-2$	Compare coefficients of x^2 :
$(-6)(-1) = 3C$	$(-9)(-4) = 9A$	$1 = A + B \Rightarrow B = 1 - A$
$\therefore C = 2$	$\therefore A = 4$	but $A = 4 \Rightarrow B = -3$

$$\therefore \frac{(x-7)(x-2)}{(x+2)(x-1)^2} \equiv \frac{4}{x+2} - \frac{3}{x-1} + \frac{2}{(x-1)^2}$$

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