



Air maths tuition

Interact, engage and perform

Partial Fractions - Repeated Linear Factors

Express $\frac{x^2 - 3x + 4}{(x-1)^2(x+2)}$ in partial fractions

$$\frac{x^2 - 3x + 4}{(x-1)^2(x+2)} \equiv \frac{A}{x-1} + \frac{B}{(x-1)^2} + \frac{C}{x+2}$$

$$\therefore x^2 - 3x + 4 \equiv A(x-1)(x+2) + B(x+2) + C(x-1)^2$$

when $x = 1$	when $x = -2$	when $x = 0$ *	Compare coefficients x^2
$\therefore 2 = 3B$	$\therefore 14 = 9C$	$\therefore 4 = -2A + \frac{4}{3} + \frac{14}{9}$	$\therefore 1 = A + C$
$\therefore B = \frac{2}{3}$	$\therefore C = \frac{14}{9}$	$\therefore 2A = \frac{26}{9} - 4 = -\frac{10}{9}$	$\therefore 1 = A + \frac{14}{9} \Rightarrow A = 1 - \frac{14}{9}$
		$\therefore A = -\frac{5}{9}$	$\therefore A = -\frac{5}{9}$

$$\frac{x^2 - 3x + 4}{(x-1)^2(x+2)} \equiv \frac{2}{3(x-1)^2} - \frac{5}{9(x-1)} + \frac{14}{9(x+2)}$$

* you can use any value

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