



Air maths tuition

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Algebraic Long Division | Past Paper Question | C3 Edexcel June 2013 Q1

Given that $\frac{3x^4 - 2x^3 - 5x^2 - 4}{x^2 - 4} = ax^2 + bx + c + \frac{dx + e}{x^2 - 4}$, $x \neq \pm 2$

find the values of the constants a , b , c , d and e . (4)

$$\begin{array}{r} 3x^2 - 2x + 7 \\ x^2 + 0x - 4 \overline{) 3x^4 - 2x^3 - 5x^2 + 0x - 4} \\ \underline{3x^4 + 0x^3 - 12x^2} \\ -2x^3 + 7x^2 + 0x \\ \underline{-2x^3 + 0x^2 + 8x} \\ -7x^2 - 8x - 4 \\ \underline{7x^2 + 0x - 28} \\ -8x + 24 \end{array}$$

Remainder

$$\frac{16}{3} = 5\frac{1}{3}$$
$$= 5 + \frac{1}{3}$$
$$3 \overline{) 16} \\ \underline{15} \\ 1$$

$$\therefore \frac{3x^4 - 2x^3 - 5x^2 - 4}{x^2 - 4} = 3x^2 - 2x + 7 + \frac{-8x + 24}{x^2 - 4}$$
$$= ax^2 + bx + c + \frac{dx + e}{x^2 - 4} \quad \text{where } a = 3, b = -2, c = 7, d = -8, e = 24$$

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