A#1 ALGEBRAIC FRACTIONS

AEM questions are taken from past exam papers - they have been carefully chosen to represent a typical exam question at each level of difficulty. If you can do these questions, you’re ready to move onto past papers for this topic.

APPRENTICE

Express \( \frac{4x}{x^2 - 9} - \frac{2}{x + 3} \) as a single fraction in its simplest form.

EXPERT

Given that \( \frac{x^4 + x^3 - 3x^2 + 7x - 6}{x^2 + x - 6} \equiv x^2 + A + \frac{B}{x - 2} \), find the values of the constants \( A \) and \( B \).

MASTER

The polynomial \( g(x) \) is defined by \( g(x) = 8x^3 - 12x^2 - 2x + 3 \).

a. Given that \( x = -\frac{1}{2} \) is a solution of the equation \( g(x) = 0 \), write \( g(x) \) as a product of three linear factors.

b. The function \( h \) is defined by \( h(x) = \frac{4x^2 - 1}{g(x)} \) for \( x > 2 \).

Simplify \( h(x) \), and hence show that \( h \) is a decreasing function.