Partial Fraction Decomposition

A rational function is the quotient of two polynomials. A proper rational function is the quotient of two polynomials where the numerator has a lower degree than the denominator.

Review of partial fraction decomposition (pf)

EX 1 Rewrite this as a sum/difference of two fractions.

\[ \frac{x - 7}{x^2 - x - 12} \]
EX 2 \[ \int \frac{4x^2 - 6x + 2}{x^3 (x-1)(x+3)} \, dx \]

EX 3 \[ \int \frac{33x^2 - 7x + 70}{(3x-2)(x^2 + 4)} \, dx \]
EX 4 \[ \int \frac{\cos x}{\sin^4 x - 16} \, dx \]

EX 5 \[ \int \frac{x^3 - 7x^4 + 11x^2 - 13x^2 + x - 6}{x^3 - 2x^2} \, dx \]