Partial Fraction

Partial Fraction

A *rational function* (有理函數), $f(x)=\dfrac{P(x)}{Q(x)}$, is a ratio of polynomials where the denominator $Q(x)\neq 0$.

Example.

$$\frac{1}{x^2+2x-3}=\frac{1}{4}\left(\frac{-1}{x+3}+\frac{1}{x-1}\right)$$

$$\frac{3x+5}{(1-2x)^2}=\frac{13/2}{1-2x}+\frac{-3/2}{(1-2x)^2}$$

$$\frac{x^4+x^3+x^2+1}{x^2+x-2}=x^2+3+\frac{4/3}{x-1}+\frac{-13/3}{x+2}$$

Partial Fraction

Integration of Rational Functions by Partial Fractions