

C4 Cheat Sheet

1 Partial fractions

1.1 Split a fraction whose denominator is a product of linear expressions

Set the fraction equal to the sum of constants over each linear expression, then multiply by the denominator and solve by substitution.

1.2 Split a fraction where one or more of the factors in the denominator are squared

Each squared term gets two terms in the summation, one of the non squared term, and one of the squared term.

1.3 Deal with top heavy fractions

Use long division to simplify, for example simplifying $\frac{3x^2 - 3x - 2}{(x - 1)(x - 2)}$

Long division to find remainder

$$\begin{array}{r} 3 \\ x^2 - 3x + 2 \overline{) 3x^2 - 3x - 2} \\ \underline{- 3x^2 + 9x - 6} \\ 6x - 8 \end{array}$$

Re-write with remainder

$$3 + \frac{6x - 8}{(x - 1)(x - 2)}$$

Partial fractions can then be applied normally

2 Parametric equations