

## Partial Fraction Decomposition

Partial Fraction Decomposition is used to write a single fraction as a sum or difference of two or more fractions.

$$\frac{5x+1}{x^2+x-2} = \frac{3}{x+2} + \frac{2}{x-1}$$

The degree of the numerator must be less than the degree of the denominator.

### Distinct Linear Factors

1. Write the partial fraction decomposition of  $\frac{5x+1}{x^2+x-2}$ .

Repeated Linear Factors

2. Write the partial fraction decomposition of  $\frac{2x^2 + 16x + 29}{(x+3)^2(x+4)}$ .

Distinct Quadratic Factors

3. Write the partial fraction decomposition of  $\frac{2x-3}{x^3+10x}$ .

Repeated Quadratic Factors

4. Write the partial fraction decomposition of  $\frac{2x-1}{x(x^2+1)^2}$ .

Partial Fraction Decomposition With Long Division

5. Write the partial fraction decomposition of  $\frac{x^3 - x + 3}{x^2 + x - 2}$ .