

Key Concepts

Proof by Contradiction

- To prove a statement by contradiction, assume the statement is false, then "do maths" until you deduce a line of maths that cannot be true.

Partial Fractions

$$\bullet \frac{ax+b}{(cx+d)(ex+f)} = \frac{P}{cx+d} + \frac{Q}{ex+f} \quad , \quad \frac{ax^2+bx+c}{(dx+e)(fx+g)(hx+i)} = \frac{P}{dx+e} + \frac{Q}{fx+g} + \frac{R}{hx+i}$$

$$\bullet \frac{ax^2+bx+c}{(dx+e)(fx+g)^2} = \frac{P}{dx+e} + \frac{Q}{fx+g} + \frac{R}{(fx+g)^2}$$

- An algebraic fraction is improper if the degree of the numerator is greater than or equal to the degree of the denominator.