

Rational Functions Essential Practice



Skill: Higher Order Polynomial Division

Note: Dividing by polynomials of order 2 or more is not strictly required by the specification, however, being able to do so will make some partial fractions questions much easier.

Questions

Attempt these questions independently showing full and clear solutions. Check each answer as you go.

1. The function $3x + 2$ is divided by $x - 3$.
 - a. Find the quotient and remainder.
 - b. Hence express $\frac{3x+2}{x-3}$ in the form $A + \frac{B}{x-3}$

2. Find the quotient and remainder when
 - a. $2x^2 - x - 6$ is divided by $x + 2$
 - b. $6x^3 - 5x^2 + 9x - 6$ is divided by $2x - 1$.

3. Find the quotient and remainder and hence express algebraically the answer obtained when:
 - a. $3x^3 + 8x^2 + 10x + 4$ is divided by $x^2 + x + 1$
 - b. $24x^3 - 4x^2 - 3x - 1$ is divided by $4x^2 - 1$
 - c. $x^4 + x^3 + 7x^2 + 3x + 13$ is divided by $3 + x^2$
 - d. $6t^4 - 11t^3 + 26t^2 - 18t + 22$ is divided by $3t^2 - 4t + 5$