

Maths Rules

The Factor Theorem

Section A

1. Use the factor theorem to show that $(x - 2)$ is a factor of $x^3 + 2x^2 - 13x + 10$.
2. Use the factor theorem to show that $(2x + 3)$ is a factor of $8x^4 + 10x^3 - 3x^2 + 2x + 3$.
3. Find the remainder when $x^3 - x^2 + 1$ is divided by $(x + 2)$.
4. Given that $(x - a)$ is a factor of $x^3 - 3x^2 - 6x + 8$, find the value of a .
5. Given that $(2x - b)$ is a factor of $2x^3 - 9x^2 + 5x + 7$, find the value of b .

Section B

1. $(x - 1)$ and $(2x + 5)$ are both factors of $4x^4 + ax^3 - 11x^2 + bx + 25$.
 - (a) Find the values of a and b .
 - (b) Hence, or otherwise, fully factorise $4x^4 + ax^3 - 11x^2 + bx + 25$.
2. Given that $(x - b)$ and $(x + 3)$ are factors of $x^3 + 2bx^2 - (b^2 - 1)x - 18$, find the value of b .
3. Given that $(x - a)$ and $(x - a^2)$, are both factors of $x^3 - 28x + (a^5 - a^3 + 24)$, find the value of a .