

- 1 Use synthetic division to find the quotient and remainder when $x^4 - x^2 + 7$ is divided by $x + 1$.
- 2 Which, if any, of the linear factors $x - 1$, $x + 2$, $x + 3$ are factors of $x^3 + 2x^2 - 5x - 6$?
- 3 Find k for which $x^3 - 3x^2 + kx + 6$ has a factor $x + 3$.
- 4 Solve $4x^3 - 24x^2 + 27x + 20 = 0$.
- 5 Show that $2x + 1$ is a factor of $8x^3 + 1$, and that $8x^3 + 1$ has no other factor of the form $ax + b$, where $a, b \in R$.
- 6 Find p for which $2x^4 + 9x^3 + 5x^2 + 3x + p$ is divisible by $x + 4$.
Show that when p has this value, the expression is divisible by $2x - 1$.
- 7 Show that the equation $x^3 - x^2 - 2x + 1 = 0$ has a root between 1.5 and 2 and find the root to one decimal place.