

1. Factorise using the remainder theorem:  $2x^3 - 9x^2 - 11x + 30$
2. Factorise:  $(2y + x)^2(y - 2x) + (2x + y)^2(2x - y)$
3. On dividing  $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$  by  $(x - 1)$  we get remainder as 5 and 19 respectively. Find the remainder when  $f(x)$  is divided by  $(x - 2)$ .
4. Find the value of  $C$  for which the polynomial  $2x^3 - 7x^2 - 3x + C$  is exactly divisible by  $(2x + 3)$ . Hence factorise the polynomial.
5. If  $x + y + z = 0$ , then show that  $x^3 + y^3 + z^3 = 3xyz$ .
6. Find the remainder when the polynomial  $p(y) = y^4 - 3y^2 + 7y - 10$  is divided by  $(y - 2)$ .
7. Factorise:  $a(a + b)^2 - 2ab(a + b)$
8. Using remainder theorem, factorise:  $6x^3 - 25x^2 + 32x - 12$
9. Using suitable identity, find the value of:  $\frac{87^3 + 13^3}{87^2 - 87 \times 13 + 13^2}$
10. If  $x^3 - 5x^2 - px + 24 = (x - 4).q(x)$ , then what is the value of  $p$ ?