

1. Find the value of $x^3 + y^3 + 15xy - 125$, when $x + y = 5$.
2. If $a + b + c = 6$, find
 $(2 - a)^3 + (2 - b)^3 + (2 - c)^3 - 3(2 - a)(2 - b)(2 - c)$
3. If $(x - 3)$ and $(x - \frac{1}{3})$ are both factors of $ax^2 + 5x + b$, show that $a = b$.
4. Let p and q be the remainders, when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $(x + 1)$ and $(x - 2)$ respectively. If $2p + q = 6$, find the value of a .
5. Prove that:
 $(x + y)^3 + (y + z)^3 + (z + x)^3 - 3(x + y)(y + z)(z + x) = 2(x^3 + y^3 + z^3 - 3xyz)$
6. Factorise: $4x^3 + 12x^2 - x - 3$
7. Find the remainder when $2x^2 - x + 1$ is divided by $(2x + 1)$.
8. Factorise: $\frac{1}{8}a^3 + \frac{1}{4}a^2b + \frac{1}{6}ab^2 + \frac{1}{27}b^3$
9. Without actually calculating the cubes, find the value of
 $(8)^3 + (-15)^3 + (7)^3$
10. If $a + b + c = 15$, $ab + bc + ca = 35$, find the value of $a^2 + b^2 + c^2$.