POLYNOMIALS

ASSIGNMENT NO. 38

1. Find the remainder when $x^3 - ax^2 + 5x - a$ is divided by $(x - a)$.
2. Find the value of $ab + bc + ca$, if $a + b + c = 9$ and $a^2 + b^2 + c^2 = 35$.
3. Show that $(2x + 1), (x - 3)$ and $(3x + 1)$ are factors of the polynomial $6x^3 - 13x^2 - 14x - 3$.
4. Factorise: $(3x + 4y)^2 + 2(3x + 4y)(3x - 4y) + (3x - 4y)^2$
5. The polynomials $p(x) = ax^3 - 3x^2 + 4$ and $q(x) = 2x^3 - 5x + a$ when divided by $(x - 2)$ leaves the remainder as p and q. If $p - 2q = 4$, find a.
6. Prove that:
   $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c) = 0$, when $a + b + c = 3x$.