POLYNOMIALS

ASSIGNMENT NO. 37

1. Let S_1 and S_2 are the remainders when a polynomial $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $(x + 1)$ and $(x - 2)$ respectively. If $2S_1 - S_2 = 10$, find the value of a.
2. Factorise: $16x^3 - 2y^3$
3. If $x + y + 1 = 0$, prove that $x^3 + y^3 + 1 = 3xy$
4. Simplify: $(p + q + r)^2 + (p - q - r)^2$
5. If $x + 2y = 10, xy = 15$, find $x^3 + 8y^3$.
6. Factorise: $(x^2 - 4x)(x^2 - 4x - 1) - 20$
7. R_1 and R_2 are the remainders obtained when $x^3 + 2x^2 - 5kx - 7$ and $x^3 + kx^2 - 12x + 6$ are divided by $(x + 1)$ and $(x - 2)$ respectively and if $2R_1 + R_2 = 6$, then find the value of k.
8. Factorise: $(a^2 - 2a) - 23(a^2 - 2a) + 120$
9. Using factor theorem, factorise: $x^3 - 2x^2 - 5x + 6$
10. Evaluate 101×99 using suitable identity.