POLYNOMIALS

ASSIGNMENT NO. 27

1. If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 2x + a$ leaves the remainder when divided by $(x - 2)$, find the value of a.
2. Prove that:
   $a^3 + b^3 + c^3 - 3abc = \frac{1}{2}(a + b + c)[(a - b)^2 + (b - c)^2 + (c - a)^2]$
3. Factorise: $(x^2 - 4x)(x^2 - 4x - 1) - 20$
4. Find the value of $x^3 + y^3 - 12xy + 64$ if $x + y = -4$.
5. Show that $(x + 1)$ and $(2x - 3)$ are the factors of $2x^3 - 9x^2 + x + 12$. Also find the remaining factors.
6. Check whether the polynomial $p(x) = 4x^3 + 4x^2 - x - 1$ is a multiple of $(2x + 1)$.
7. Find the value of $8x^3 + 27y^3$, if $2x + 3y = 8$ and $xy = 2$.
8. Factorise: $7(x - 2y)^2 - 25(x - 2y) + 12$
9. Without finding the cubes, find the value of $\left(\frac{1}{4}\right)^3 + \left(\frac{1}{3}\right)^3 - \left(\frac{7}{12}\right)^3$
10. Show that 1 and (– 2) are the zeroes of the polynomial $x^3 + 2x^2 - x - 2$. Also find its third zero.