POLYNOMIALS

ASSIGNMENT NO. 33

1. Factorise: $8(x+y)^3 - 27(x-y)^3$
2. Using identity evaluate 105×103
3. Factorise: $\left(\frac{x}{2} - 3y\right)^3 + \left(3y - \sqrt{3}z\right)^3 + \left(\sqrt{3}z - \frac{x}{2}\right)^3$
4. Expand using identity $\left(\frac{a}{2} + \frac{b}{4} - \frac{c}{3}\right)^2$
5. Prove that:
   $2x^3 + 2y^3 + 2z^3 - 6xyz = (x+y+z)[(x-y)^2 + (y-z)^2 + (z-x)^2]$
6. Find the value of a if $2y+3$ is a factor of $2y^3 + 9y^2 - y - a$.
7. If $a^3 + b^3 + c^3 = 3abc$ and $a+b+c = 0$, prove that:
   $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1$
8. Find the value of k so that the polynomial $x^3 - 3x^2 - 4x + k$ is divisible by $(x+2)$. Hence factorise the polynomial.
9. If $x^2 + \frac{1}{x^2} = 7, x > 0$; find the value of $x^3 + \frac{1}{x^3}$ and $x - \frac{1}{x}$.
10. Factorise: $8p^3 - q^3 - 12p^2q + 6pq^2$