POLYNOMIALS

ASSIGNMENT NO. 25

1. Using remainder theorem, find the remainder on dividing $x^4 + x^3 - 2x^2 + x + 1$ by $x + 1$.
2. Check whether $x^3 - x + 1$ is a multiple of $(2 - 3x)$.
3. If $x = \frac{\sqrt{3}+\sqrt{2}}{\sqrt{3}-\sqrt{2}}$ and $y = \frac{\sqrt{3}-\sqrt{2}}{\sqrt{3}+\sqrt{2}}$, find the value of $x^2 + y^2 + xy$ if $\sqrt{6} = 2.4$
4. Simplify: $7x^3 + 8y^3 - (4x + 3y).(16x^2 - 12xy + 9y^2)$
5. If $x = 1 - \sqrt{2}$, find the value of $\left(x - \frac{1}{x}\right)^3$
6. Simplify $(a + b)^3 + (a - b)^3 + 6a(a^2 - b^2)$
7. If A and B 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 and $2A + B = 6$, find the value of a.
8. What must be subtracted from $x^4 + 1$ so that $x^4 + 1$ is exactly divisible by $(x - 1)$. Write the resultant polynomial which is exactly divisible by

   $(x - 1)$.
9. Factorise: $8 - 27a^3 - 36a + 54a^2$
10. Find the value of $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c)$ if $a + b + c = 3x$.