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POLYNOMIALS

ASSIGNMENT NO. 5

1. Evaluate by using suitable identity: $(998)^3$
2. If $x^2 - 1$ is a factor of $ax^3 + bx^2 + cx + d$, show that $a + c = 0$.
3. Factorise:

a. $x^2 + \frac{1}{x^2} + 2 - 2x - \frac{2}{x}$

b. $x^4 - y^4$

4. Factorise:

a. $27a^3 + 8b^3 + 54a^2b + 36ab^2$

b. $8x^3 + 64$

5. If the polynomial $p(x) = x^4 - 2x^3 + 3x^2 - ax + 8$ is divided by $(x - 2)$ leaves the remainder 10, then find the value of a.
6. Factorise: $x^3 - 3x^2 - 10x + 24$
7. Verify that: $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$
8. Find the value of p if the polynomial $p(x) = x^4 - 2x^3 + 3x^2 - px + 3p - 7$ when divided by $(x + 1)$ leaves the remainder 19. Also find the remainder when $p(x)$ is divided by $(x + 2)$.