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POLYNOMIALS

ASSIGNMENT NO. 36

1. Factorise: $x^3 - 3x^2 - 10x + 24$
2. Verify that:
   $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$
3. 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 $(x + 2)$.
4. Check if the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$ is exactly divisible by $(2t + 1)$.
5. Evaluate 93×107 without multiplying directly.
6. If a, b, c are all non – zero and $a + b + c = 0$, prove that: $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} = 3$
7. Find the value of k so that $(2x - 1)$ be the factor of
   $8x^4 + 4x^3 - 16x^2 + 10x + k$.
8. If $p(x) = x^2 - 4x + 3$, evaluate $p(2) - p(-1) + p\left(\frac{1}{2}\right)$
9. Factorise: $x^3 - 8x^2 + 17x - 10$
10. Factorise: $8(x + y)^3 + 27(x - y)^3$

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