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POLYNOMIALS

ASSIGNMENT NO. 13

1. Verify $x^3 - y^3 = (x - y)(x^2 + xy + y^2)$. Hence factorise $216x^3 - 125y^3$

2. Expand $\left(\frac{a}{4} - \frac{b}{2} + 1\right)^2$ using identity.

3. Find the product of $(3x + 2y)(3x - 2y)(9x^2 + 4y^2)$

4. Using identity find the following product:
   $(2x - y + 3z)(x^2 + y^2 + 9z^2 + 2xy + 3yz - 6zx)$

5. If $x - y = 2$ and $xy = 15$, find $x^2 + y^2$ and $x^3 - y^3$.

6. Factorise: $9x^2 + 4y^2 + z^2 - 12xy + 4yz - 6zx$. Hence find the value when $x = 1, y = 2$ and $z = -1$.

7. Factorise: $9a^3 - 27a^2 - 100a + 300$, if $3a + 10$ is one of its factor.

8. The polynomials $ax^3 - 3x^2 + 4$ and $2x^3 - 5x + a$ when divided by $(x - 2)$, leaves the remainders p and q respectively. If $p - 2q = 4$, find the value of a.

9. If $a = 5 + 2\sqrt{6}$ and $b = \frac{1}{a}$ then what will be the value of $a^2 + b^2$ and $a^3 + b^3$.

10. Factorise: $x^4y^4 - 256z^4$