POLYNOMIALS
CLASS 9
ASSIGNMENT 2

Factorise: (Question 1 to 9)

1. $x^2 - 4x + 4$
2. $8x^2 - 6x + 1$
3. $x^3 - 0.125$
4. $9x^2 + y^2 + 4z^2 + 6xy + 4yz + 12zx$
5. $12(x^2 + 7x)^2 - 8(x^2 + 7x)(2x - 1) - 15(2x - 1)^2$
6. $(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$
7. $27a^3 + \frac{1}{64b^3} + \frac{27a^2}{4b} + \frac{9a}{16b^2}$
8. $(a^2 - 2a)^2 - 23(a^2 - 2a) + 120$
9. $\sqrt{7}x^2 + 9x + 2\sqrt{7}$
10. If $a^3 + b^3 + c^3 = 3abc$ and $a + b + c = 0$, prove that
    $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1$.
11. Simplify and factorise $(a + b + c)^2 - (a - b - c)^2 + 4b^2 - 4c^2$.
12. If $x = 4 - \sqrt{15}$, find the value of $\left(x + \frac{1}{x}\right)^2$.
13. Simplify: $7x^3 + 8y^3 - (4x + 3y)(16x^2 - 12xy + 9y^2)$.
14. If $a + b = 12$ and $ab = 27$, then find $a^3 + b^3$.
15. If x and y are positive real numbers such that $25x^2 + 49y^2 = 841$ and $xy = 12$, then find the value of $125x^3 + 343y^3$.
16. If $a + b + c = 0$, find the value of $(-2a)^3 + (-2b)^3 + (-2c)^3 - 3(-2a)(-2b)(-2c)$.
17. If $a + b + c = 5$ and $ab + bc + ca = 10$, then prove that
    $a^3 + b^3 + c^3 - 3abc = -25$.
18. If x and y are two positive real numbers such that $x > 3y, x^2 + 9y^2 = 369$ and $xy = 60$, find the value of $x - 3y$.
19. Find the product $(x + y + 2z)(x^2 + y^2 + 4z^2 - xy - 2yz - 2zx)$.
20. Simplify: $(3a - 2b)(9a^2 + 6ab + 4b^2) - (2a + 3b)(4a^2 - 6ab + 9b^2)$.