

Advanced_Grade-9_Polynomials

Algebraic Identities

1. Evaluate : $(\sqrt{2} + \sqrt{3})^2 + (\sqrt{5} - \sqrt{2})^2$
2. Simplify: $(2a + 3b)^3 - (2a - 3b)^3$
3. If $x^2 + \frac{1}{x^2} = 7$. Find the value of $x^3 + \frac{1}{x^3}$ taking only the positive value of $x + \frac{1}{x}$
4. If $x^2 + \frac{1}{x^2} = 98$, then find value of $x^3 + \frac{1}{x^3}$
5. . If $z^2 + \frac{1}{z^2} = 14$. Find the value $z^3 + \frac{1}{z^3}$ taking only the positive value of $z + \frac{1}{z}$
6. If $x + \frac{1}{x} = 5$, evaluate $x^2 + \frac{1}{x^2}$
7. If $x + \frac{1}{x} = 5$, evaluate $x^3 + \frac{1}{x^3}$
8. If $x - \frac{1}{x} = 2$, find $x^4 + \frac{1}{x^4}$
9. Prove that $(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3 = 3(a + b)(b + c)(c + a)(a - b)(b - c)(c - a)$.
10. Prove that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$
11. $ab + bc + ca = 0$, find the value of $\frac{1}{a^2 - bc} + \frac{1}{b^2 - ca} + \frac{1}{c^2 - ac}$
12. $\frac{1}{64}x^3 - 8y^3 + \frac{3}{16}x^2y - \frac{3}{2}xy^2$

