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Worksheet: Polynomials

1. Factorise x^2 – 1 – 2a – a^2.
2. Using a suitable identity, determine the value of $(17)^3 + (-12)^3 + (-5)^3$
3. Evaluate (102)^3 using a suitable identity.
4. Find the values of a and b so that (2x^3 + a x^2 + x + b) has (x + 2) and (2x – 1) as factors.
5. Factorise: $(a – b)^3 + (b – c)^3 + (c – a)^3$
6. Find the value of $9x^2 + 4y^2$ if xy = 6 and 3x + 2y = 12.
7. If the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$ are reciprocal of each other, prove that c = a.
8. Factorise $8a^3 + b^3 + 12a^2b + 6ab^2$
9. Find the quadratic polynomial if its zeroes are 0 and $\sqrt{5}$.
10. Find a quadratic polynomial, the sum and product of whose zeroes are $\sqrt{2}$ and -3/2, respectively. Also find its zeroes.
11. Find the value of $x^3 + y^3 + z^3 – 3xyz$ if $x^2 + y^2 + z^2 = 83$ and x + y + z = 15
12. Find the zeroes of the polynomial 4x^2 – 4x – 8. Also, establish a relationship between the zeroes and coefficients.
13. α and β are zeroes of the quadratic polynomial $x^2 – 6x + y$. Find the value of 'y' if $3\alpha + 2\beta = 20$
14. Factorise $64m^3 – 343n^3$
15. Find the value of "p" from the polynomial $x^2 + 3x + p$, if one of the zeroes of the polynomial is 2.
16. Without actual division, prove that 2x^4 – 5x^3 + 2x^2 – x + 2 is divisible by x^2 – 3x + 2.
17. Calculate the perimeter of a rectangle whose area is 25x^2 - 35x + 12
18. Find the product: $(x – 3y) (x + 3y) (x^2 + 9y^2)$
19. Find a quadratic polynomial whose zeroes are 5 and –3.
20. If the product of zeroes of the polynomial $p(x)=3x^2 + kx – 2$ is 2/3 ■, find the value of k.