

TOPIC: POLYNOMIALS
SUBJECT: MATHEMATICS

CLASS: IX

- 1) Find the zeros of the polynomial (a) $x^2 + 7x + 10$ (b) $x^2 - 25$
- 2) Factorize: a) $999^2 - 1$ b) $(10.2)^3$ c) 1002×998
- 3) Factorize: a) $x^3 - 3x^2 - 9x - 5$ b) $x^3 + 7x^2 - 21x - 27$
- 4) Factorise: (a) $3x^2 + 27y^2 + z^2 - 18xy + 6\sqrt{3}yz - 2\sqrt{3}zx$ (b) $27x^3 + 125y^3$ (c) $(2a - 3b + c)^2$
(d) $\frac{1}{64}a^3 + b^3 + 125c^3 - 15abc$ (e) $[x - 1/x y]^3$ (f) $x^4 y^4 - x y$
(g) $8x^3 - (2x - y)^3$ (h) $a^6 - b^6$
- 5) Using factor theorem, Show that $(a - b)$ is the factor of $a(b^2 - c^2) + b(c^2 - a^2) + c(a^2 - b^2)$
- 6) Factorize: (a) $4\sqrt{3}x^2 + 5x - 2\sqrt{3}$ (b) $21x^2 - 2x + 1/21$ (c) $9(2a - b)^2 - 4(2a - b) - 13$
- 7) Simplify and factorise $(a + b + c)^2 - (a - b - c)^2 + 4b^2 - 4c^2$
- 8) Factorise: $(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3$
- 9) For what value of a is $2x^3 + ax^2 + 11x + a + 3$ exactly divisible by $(2x - 1)$ (-7)
- 10) If $x - 2$ is a factor of a polynomial $f(x) = x^5 - 3x^4 - ax^3 + 3ax^2 + 2ax + 4$, then find the value of a
- 11) Find the value of a and b so that $x^2 - 4$ is a factor of $ax^4 + 2x^3 - 3x^2 + bx - 4$ (1, -8)
- 12) If $x = 2$ and $x = 0$ are zeroes of the polynomial $2x^3 - 5x^2 + px + b$, then find the value of p and b
- 13) Find the value of a and b so that polynomial $x^3 - ax^2 - 13x + b$ is exactly divisible by $(x - 1)$ as well as $(x + 3)$ (3, 15)
- 14) The polynomial $x^3 - mx^2 + 4x + 6$ when divided by $(x + 2)$ leaves remainder 14 find the value of m
- 15) If the polynomial $ax^3 + 3x^2 - 13$ and $2x^3 - 5x + a$ when divided by $(x - 2)$ leave the same remainder, find the Value of a
- 16) If both $(x - 2)$ and $(x - 1/2)$ are factors of $px^2 + 5x + r$, show that $p = r$
- 17) If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is divided by $x - 1$ and $x + 1$ the remainders are 5 and 19 respectively, then find a and b
- 18) If A and B be the remainders when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $(x + 1)$ and $(x - 2)$ respectively and $2A + B = 6$, find the value of a (2)
- 19) Show that $x + 1$ and $2x - 3$ are factors of $2x^3 - 9x^2 + x + 12$
- 20) If sum of remainders obtained by dividing $ax^3 - 3ax^2 + 7x + 5$ by $(x - 1)$ and $(x + 1)$ is -36 the find a (22/3)
- 21) By using suitable identity, find the value of:
(a) $(-6)^3 + 13^3 + (-7)^3$ (b) $(-21)^3 + (28)^3$ (c) $(9.8)^3 - (11.3)^3 + (1.5)^3$ (d) $(8/15)^3 + (-1/3)^3 + (-1/5)^3$
- 22) Find the remainder when $9x^3 - 3x^2 + x - 5$ is divided by $\left[x - \frac{2}{3}\right]$
- 23) Find the remainder when $x^{51} + 51$ is divided by $x + 1$ (50)
- 24) Find the remainder when $x^3 - px^2 + 6x - p$ is divided by $(x - p)$
- 25) Find the value of $x^3 + y^3 + 15xy - 125$ when $x + y = 5$ (0)
- 26) Find the value of $p^3 - q^3$, if $p - q = 5/7$ and $p q = 7/3$ (1840/343)
- 27) If $a + b + c = 8$, $a^2 + b^2 + c^2 = 30$. Find the value of $a b + b c + c a$ (17)
- 28) If $2x + 3y = 13$ and $x y = 6$ then, find $8x^3 + 27y^3$ (793)
- 29) Find the value of $a^3 + b^3 + c^3 - 3abc$, when $a + b + c = 8$ and $a b + b c + c a = 25$ (-88)
- 30) Find the value of $x^3 + y^3 + z^3 - 3xyz$, if $x + y + z = 12$ and $x^2 + y^2 + z^2 = 70$ (396)
- 31) If $x + y + z = 1$, $x y + y z + z x = -1$ and $xyz = -1$, find the value of $x^3 + y^3 + z^3$ (1)
- 32) If $(a + b)^2 = 2a^2 + 2b^2$, show that $a = b$
- 33) If $(a + b + c) = 0$, then prove that $a^3 + b^3 + c^3 = 3abc$
- 34) Prove that $2x^3 + 2y^3 + 2z^3 - 6xyz = (x + y + z) [(x - y)^2 + (y - z)^2 + (z - x)^2]$
- 35) Give possible expressions for the length and breadth of each of the following rectangles, in which their areas are given
 $25a^2 - 35a + 12$
- 36) Simplify: $\left\{\frac{x}{3} + \frac{y}{5}\right\}^3 - \left\{\frac{x}{3} - \frac{y}{5}\right\}^3$ $(2/15x^2y + 2/15y^3)$
- 37) Simplify: $(a + b + c)^2 + (a - b + c)^2 + (a + b - c)^2$
- 38) What must be subtracted from $4x^4 - 2x^3 - 6x^2 + x - 5$, so that the result is exactly divisible by $2x^2 + x - 1$ (- 6)
- 39) find the dimensions of a cuboid, whose volume is $2py^2 + 6py - 20p$
- 40) If $p(x) = x^2 - 4x + 3$, evaluate $p(2) - p(-1) + p(1/2)$

41) Maximum number of zeroes in a cubic polynomial are:

- a) 0 b) 1 c) 2 d) 3

42) common factor in quadratic polynomials $x^2 + 8x + 15$ and $x^2 + 3x - 10$ is :

- a) $x + 3$ b) $x + 5$ c) $x - 5$ d) $x - 3$

43) Which of the following is a polynomial in y ?

- a) $y^2 + \sqrt{2}$ b) $y + 1/y + 2$ c) $\sqrt{y} + \sqrt{2}y$ d) $y\sqrt{y} + 1$

44) If $x^3 + 6x^2 + 4x + k$ is exactly divisible by $x + 2$, then k is equal to :

- a) -6 b) -7 c) -8 d) -10

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