INTERNATIONAL INDIAN SCHOOL

BURAIDAH

Worksheet For The Academic Year 2024-25

CLASS: IX SUBJECT: Mathematics DATE: 29/04/2024

LESSON-2 Polynomials

1) Find which of the following are polynomials in one variable? If not why?

a) $4x^2$ b) $y^2 + \sqrt{3}\,x$ c) $3\sqrt{t} + t\sqrt{2}$ d) $\frac{2}{y} + 4$ e) $-2y + y^{-3}$

2) Find the degree of the polynomials:

a) $x^5 - x^4 + 3$ b) $2 - y^2 - y^3 + 2y^8$ c) 2 d) 0

3) The degree of a cubic polynomial is _____.

4) Give an example of:

a) a monomial of degree 5 b) a binomial of degree 30

5) Find the value of the polynomials:

a) $P(x) = 5x^2 - 3x + 7$ at $x = 1$ b) $P(t) = 4t^4 + 5t^3 - t^2 + 6$ at $t = a$.

6) Check if 2 is a zero of the polynomial

a) $P(x) = x + 2$ b) $P(x) = x^2 - 2x$

7) Find the zeroes of the following polynomials:

a) $P(x) = 2x + 1$ b) $g(x) = 4x$ c) $f(x) = 12x - 5$ d) $g(x) = 4x - \frac{\pi}{2}$

8) Check if $x + 2$ is a factor of $x^3 + 3x^2 + 5x + 6$

9) Find the value of 'k' , if $x - 1$ is a factor of $4x^3 + 3x^2 - 4x + k$.

10) Factorise by splitting method:

a) $6x^2 + 11x + 3$ b) $20x^2 - 9x + 1$

11) If the area of a rectangle is $4x^2 + 4x - 3$, find its length and breadth.

12) Find ‘b’ if $x^3 – 3x^2 + bx – 6$ is divisible by $x – 3$.

13) If $a + b + c = 0$, $a^3 + b^3 + c^3$ = _____.

14) Factorise:

a) $a^3 – 27$ b) $5x^2 – 15xy$ c) $x^2 – 3x$ d) $8y^3 + 125x^3$

e) $4x^2 + y^2 + 4 + 4xy + 8x + 4y$ f) $9x^2 + 6xy + y^2$

g) $125x^3 – 27y^3 + z^3 + 45xyz$

15) Expand:

a) $(3x + 2y)^2$ b) $(x – 2)^3$ c) $(-p + 4q – 3r)^2$ d) $(2x – 3y + z)^2$

16) a) If $f(x) = 3x + 5$, evaluate $f(7) – f(5)$

b) If $f(x) = 5x^2 – 4x + 5$, find $f(1) + f(-1) + f(0)$

17) Find the remainder if $p(x) = x^3 + 3x^2 + 3x + 5$ is divided by $x + 2$.

18) Find the value of ‘m’ , if $x + 4$ is a factor of $x^2 + 3x + m$.

19) Factorise : $x^3 – 3x^2 – 9x – 5$

20) If $(3x – 2)$ is a factor of $3x^3 + x^2 – 20x + 12$, find its remaining factors.

21) Factorise : a) $x^3 + 2x^2 – 5x – 6$ b) $9x^3 – 3x^2 – 5x – 1$

22) Use long division method to show that $2x + 3$ is a factor of

$4x^4 + 8x^3 + 5x^2 + x – 3$.

23) Without actually calculating , evaluate $11^3 + 10^3 – 21^3$

24) Evaluate using identities: a) 97^3 b) 103×107

25) Find: $(a + b)^3 + (a – b)^3$

ANSWERS

2) a) 5 b) 8 c) 0 d) not defined

3) 3

5) a) 9 b) $4a^4 + 5a^3 - a^2 + 6$

7) a) $\frac{-1}{2}$ b) 0 c) $\frac{5}{12}$ d) $\frac{\pi}{8}$

9) k = -3

10) a) (2x + 3)(3x + 1) b) (4x – 1)(5x – 1)

11) (2x – 1)(2x + 3)

12) b = 2

16) a) 6 b) 25

17) 3

18) -4

19) (x + 1)(x + 1)(x – 5)

20) (x – 2)(x + 3)

21) a) (x + 1)(x + 3)(x – 2) b) (x – 1)(3x + 1)(3x + 1)

23) 6930

24) a) 912673 b) 11021