CLASS IX: MATHS
Chapter 2: Polynomials

Questions and Solutions | EXERCISE 2.1 - NCERT Books

Q1. Which of the following expressions are polynomials in one variable and which are not ? State reason for your answer.

(i) $4x^2 - 3x + 7$ (ii) $y^2 + \sqrt{2}$ (iii) $3\sqrt{t} + t\sqrt{2}$

(iv) $y + \dfrac{2}{y}$ (v) $x^{10} + y^3 + t^{50}$

Sol. (i) $4x^2 - 3x + 7$

This expression is a polynomial in one variable x because there is only one variable (x) in the expression.

(ii) $y^2 + \sqrt{2}$

This expression is a polynomial in one variable y because there is only one variable (y) in the expression.

(iii) $3\sqrt{t} + t\sqrt{2}$

The expression is not a polynomial because in the term $3\sqrt{t}$, the exponent of t is $\dfrac{1}{2}$, which is not a whole number.

(iv) $y + \dfrac{2}{y} = y + 2y^{-1}$

The expression is not a polynomial because exponent of y is (–1) in term $\dfrac{2}{y}$ which in not a whole number.

(v) $x^{10} + y^3 + t^{50}$

The expression is not a polynomial in one variable, it is a polynomial in 3 variables x, y and t.

Q2. Write the coefficient of x^2 in each of the following :

(i) $2 + x^2 + x$ (ii) $2 - x^2 + x^3$ (iii) $\dfrac{\pi}{2}x^2 + x$ (iv) $\sqrt{2} - 1$

Sol. (i) $2 + x^2 + x$
Coefficient of $x^2 = 1$
(ii) $2 - x^2 + x^3$

Coefficient of $x^2 = -1$

(iii) $\dfrac{\pi}{2}x^2 + x$

Coefficient of $x^2 = \dfrac{\pi}{2}$

(iv) $\sqrt{2} - 1$

Coefficient of $x^2 = 0$

Q3. Give one example each of a binomial of degree 35 and of a monomial of degree 100.

Sol. One example of a binomial of degree 35 is $3x^{35} - 4$.

One example of monomial of degree 100 is $5x^{100}$.

Q4. Write the degree of each of the following polynomials :

(i) $5x^3 + 4x^2 + 7x$ (ii) $4 - y^2$ (iii) $5t - \sqrt{7}$ (iv) 3

Sol. (i) $5x^3 + 4x^2 + 7x$

Term with the highest power of $x = 5x^3$

Exponent of x in this term = 3

$\therefore$ Degree of this polynomial = 3.

(ii) $4 - y^2$

Term with the highest power of $y = -y^2$

Exponent of y in this term = 2

$\therefore$ Degree of this polynomial = 2.

(iii) $5t - \sqrt{7}$

Term with highest power of $t = 5t$.

Exponent of t in this term = 1

$\therefore$ Degree of this polynomial = 1.

(iv) 3

This is a constant which is non-zero

So, degree of this polynomial = 0

Q5. Classify the following as linear, quadratic and cubic polynomials :

(i) $x^2 + x$ (ii) $x - x^3$ (iii) $y + y^2 + 4$

(iv) $1 + x$ (v) 3t   (vi) r^2 (vii) $7x^2$

Sol. (i) Quadratic   (ii) Cubic   (iii) Quadratic

(iv) Linear   (v) Linear   (vi) Quadratic

(vii) Quadratic