RD SHARMA

Solutions

Class 7 Maths

Chapter 7

Ex 7.1

Q1) Identify the monomials, binomials, trinomials and quadrinomials from the following expressions:

(i) a^2 ***(ii)*** $a^2 - b^2$

(iii) $x^3 + y^3 + z^3$ ***(iv)*** $x^3 + y^3 + z^3 + 3xyz$

(v) 7 + 5 ***(vi) abc + 1***

(vii) 3x – 2 + 5 ***(viii) 2x – 3y + 4***

(ix) xy + yz + zx ***(x)*** $ax^3 + bx^2 + cx + d$

Solution:

The monomials, binomials, trinomials and quadrinomials are as follows.

(i) a^2 is a monomial expression as it contains one term only.

(ii) $a^2 - b^2$ is a binomial expression as it contains two terms.

(iii) $x^3 + y^3 + z^3$ is a trinomial expression as it contains three terms.

(iv) $x^3 + y^3 + z^3 + 3xyz$ is a quadrinomial expression as it contains four terms.

(v) 7 + 5 = 12 is a monomial expression as it contains one term only.

(vi) abc + 1 is a binomial expression as it contains two terms.

(vii) 3x – 2 + 5 = 3x + 3 is a binomial expression as it contains two terms.

(viii) 2x – 3y + 4 is a trinomial expression as it contains three terms.

(ix) xy + yz + zx is a trinomial expression as it contains three terms.

(x) $ax^3 + bx^2 + cx + d$ is a quadrinomial expression as it contains four terms.

Q2) Write all the terms of each of the following algebraic expressions:

(i) 3x ***(ii) 2x – 3*** ***(iii)*** $2x^2 - 7$ ***(iv)*** $2x^2 + y^2 - 3xy + 4$

Solution:

The terms of each of the given algebraic expressions are as follows.

(i) 3x is the onty term of the given algebraic expression.

(ii) 2x and -3 are the terms of the given algebraic expression.

(iii) $2x^2$ and -7 are the terms of the given algebraic expression.

(iv) $2x^2$, y^2, $-3xy$ and 4 are the terms of the given algebraic expression.

Q3) Identify the terms and also mention the numerical coefficients of those terms:

(i) $4xy,\ -5x^2y,\ -3yx,\ 2xy^2$

(ii) $7a^2bc,\ -3ca^2b, -\frac{5}{2}abc^2,\ \frac{3}{2}abc^2,\ -\frac{4}{3}cba^2$

Solution:

Like terms	**Numerical coefficients**
(i) 4xy, -3yx	4, -3
(ii) $\{7a^2bc,\ -3ca^2b\}$	{7, -3}
$\{-\frac{5}{2}abc^2\}$	$\{-\frac{5}{2}\}$
$\{\frac{3}{2}abc^2\}$	$\{\frac{3}{2}\}$
$\{-\frac{4}{3}cba^2\}$	$\{-\frac{4}{3}\}$

Q4) Identify the like terms in the following algebraic expressions:

(i) $a^2 + b^2 - 2a^2 + c^2 + 4a$

(ii) $3x + 4xy - 2yz + \frac{5}{2}zy$

(iii) $abc + ab^2c + 2acb^2 + 3c^2ab + b^2ac - 2a^2bc + 3cab^2$

Solution:

The like terms in the given algebraic expressions are as follows.

(i) The like terms in the given algebraic expressions are a^2 and $-2a^2$.

(ii) The like terms in the given algebraic expressions are -2yz and $\frac{5}{2}zy$.

(iii) The like terms in the given algebraic expressions are ab^2c, $2acb^2$, b^2ac and $3cab^2$.

Q5) Write the coefficient of x in the following:

(i) –12x (ii) –7xy (iii) xyz (iv) –7ax

Solution:

The coefficients of x are as follows.

(i) The numerical coefficient of x is -12.

(ii) The numerical coefficient of x is -7y.

(iii) The numerical coefficient of x is yz.

(iv) The numerical coefficient of x is -7a.

Q6) Write the coefficient of x^2 ***in the following:***

(i) $-3x^2$

(ii) $5x^2yz$

(iii) $\frac{5}{7}x^2z$

(iv) $-\frac{3}{2}ax^2 + yx$

Solution:

The coefficient of x^2 are as follows.

(i) The numerical coefficient of x^2 is -3.

(ii) The numerical coefficient of x^2 is 5yz.

(iii) The numerical coefficient of x^2 is $\frac{5}{7}z$.

(iv) The numerical coefficient of x^2 is $-\frac{3}{2}a$.

Q7) Write the coefficient of:

(i) y in –3y

(ii) a in 2ab

(iii) z in –7xyz

(iv) p in –3pqr

(v) y^2 in $9xy^2z$

(vi) x^3 in $x^3 + 1$

(vii) x^2 in $-x^2$

Solution:

The coefficients are as follows.

(i) The coefficient of y is -3.

(ii) The coefficient of a is 2b.

(iii) The coefficient of z is -7xy.

(iv) The coefficient of p is -3qr.

(v) The coefficient of y^2 is 9xz.

(vi) The coefficient of x^3 is 1.

(vii) The coefficient of $-x^2$ is -1.

Q8) Write the numerical coefficient of each in the following

(i) xy

(ii) -6yz

(iii) 7abc

(iv) $-2x^3y^2z$

Solution:

The numerical coefficient of each of the given terms is as follows.

(i) The numerical coefficient in the term xy is 1.

(ii) The numerical coefficient in the term -6yz is -6.

(iii) The numerical coefficient in the term 7abc is 7.

(iv) The numerical coefficient in the term $-2x^3y^2z$ is -2.

Q9) Write the numerical coefficient of each term in the following algebraic expressions:

(i) $4x^2y - \frac{3}{2}xy + \frac{5}{2}xy^2$

(ii) $-\frac{5}{3}x^2y + \frac{7}{4}xyz + 3$

Solution:

The numerical coefficient of each term in the given algebraic expression is as follows.

	Term	Coefficient
(i)	$4x^2y$	4
	$-\frac{3}{2}xy$	$-\frac{3}{2}$
	$\frac{5}{2}xy^2$	$\frac{5}{2}$
(ii)	$-\frac{5}{3}x^2y$	$-\frac{5}{3}$
	$\frac{7}{4}xyz$	$\frac{7}{4}$
	3	3

Q10) Write the constant term of each of the following algebraic expressions:

(i) $x^2y - xy^2 + 7xy - 3$

(ii) $a^3 - 3a^2 + 7a + 5$

Solution:

The constant term of each of the given algebraic expressions is as follows.

(i) The constant term in the given algebraic expressions is -3.

(ii) The constant term in the given algebraic expressions is 5.

Q11) Evaluate each of the following expressions for x = -2, y = -1, z = 3:

(i) $\frac{x}{y} + \frac{y}{z} + \frac{z}{x}$

(ii) $x^2 + y^2 + z^2 - xy - yz - zx$

Solution:

We have x = -2, y = -1 and z = 3

Thus,

(i)

$\frac{x}{y} + \frac{y}{z} + \frac{z}{x} = \frac{-2}{-1} + \frac{-1}{3} + \frac{3}{-2} = \frac{12-2-9}{6} = \frac{1}{6}$

(ii) $x^2 + y^2 + z^2 - xy - yz - zx$

$= (-2)^2 + (-1)^2 + (3)^2 - (-2)(-1) - (-1)(3) - (3)(-2)$

$= 4 + 1 + 9 - 2 + 3 + 6$

$= (4 + 1 + 9 + 3 + 6) - 2$

$= 23 - 2$

$= 21$

Q12) Evaluate each of the following algebraic expressions for x = 1, y = -1, z = 2, a = -2, b = 1, c = -2:

(i) ax + by + cz

(ii) $ax^2 + by^2 - cz^2$

(iii) axy + byz + cxy

Solution:

We have x = 1, y = -1, z = 2, a = -2, b = 1 and c = -2.

Thus,

(i) ax + by + cz

= (-2)(1) + (1)(-1) + (-2)(2)

= –2 – 1 – 4

= –7

(ii) $ax^2 + by^2 - cz^2$

$= (-2)(1)^2 + (1)(-1)^2 - (-2)(2)^2$

= –2 + 1 – (–8)

= –2 + 1 + 8

= –2 + 9

= 7

(iii) axy + byz + cxy

= (–2)(1)(–1) + (1)(–1)(2) + (–2)(1)(–1)

= 2 + (–2) + 2

$= 2 - 2 + 2$

$= 4 - 2$

$= 2$