RS Aggarwal Solutions Class 9 Maths Chapter 2: RS Aggarwal Solutions for Class 9 Maths Chapter 2 - Polynomials are helpful guides for students to understand and solve polynomial-related problems easily. This chapter covers different topics like polynomial expressions, degrees of polynomials, and basic operations such as addition, subtraction, multiplication, and division of polynomials.

These solutions provide step-by-step explanations and examples to make learning easier for students. Whether you're preparing for exams or just want to improve your math skills, these solutions are here to support you every step of the way.

RS Aggarwal Solutions Class 9 Maths Chapter 2 - Polynomials PDF

You can access the PDF version of RS Aggarwal Solutions for Class 9 Maths Chapter 2 - Polynomials through the link provided below. This PDF contains detailed solutions to all the questions in the chapter, making it convenient for students to study and revise the concepts covered.

RS Aggarwal Solutions Class 9 Maths Chapter 2 - Polynomials

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The solutions for RS Aggarwal Class 9 Maths Chapter 2 - Polynomials are provided below. These solutions provide detailed explanations and step-by-step guidance to help students understand the concepts effectively. By referring to these solutions, students can clarify their doubts and strengthen their understanding of polynomial expressions and equations.

RS Aggarwal Solutions Class 9 Chapter 2 - Polynomials (Ex 2A) Exercise 2.1

Question 1.

Solution:

(i) $x\ 5-2x\ 3+x+\sqrt{3}$ is an expression having only non-negative integral powers of x. So, it is a polynomial. Also, the highest power of x is 5, so, it is a polynomial of degree 5.

(ii) $y\ 3+\sqrt{3}y$ is an expression having only non-negative integral powers of y. So, it is a polynomial. Also, the highest power of y is 3, so, it is a polynomial of degree 3.

(iii) t 2−2/5t+√5 is an expression having only non-negative integral powers of t. So, it is a polynomial. Also, the highest power of t is 2, so, it is a polynomial of degree 2.

(iv) x 100−1 is an expression having only non-negative integral power of x. So, it is a polynomial. Also, the highest power of x is 100, so, it is a polynomial of degree 100.

(v) 1√2 x 2 −–√2x + 2 is an expression having only non-negative integral powers of x. So, it is a polynomial. Also, the highest power of x is 2, so, it is a polynomial of degree 2.

(vi) x −2 + 2x−1 + 3 is an expression having negative integral powers of x. So, it is not a polynomial.

(vii) Clearly, 1 is a constant polynomial of degree 0.

(viii) Clearly, −3/5 is a constant polynomial of degree 0.

(ix) x2/2−2/x2 This is an expression having negative integral power of x i.e. −2. So, it is not a polynomial.

(x) 3√2x2 – 8 is an expression having only non-negative integral power of x. So, it is a polynomial. Also, the highest power of x is 2, so, it is a polynomial of degree 2.

(xi) 1/2x2 is an expression having negative integral power of x. So, it is not a polynomial.

(xii) 1/√5x1/2 +1 In this expression, the power of x is 1/2 which is a fraction. Since it is an expression having fractional power of x, so, it is not a polynomial.

(xiii) 3/5x2−7/3x + 9 is an expression having only non-negative integral powers of x. So, it is a polynomial. Also, the highest power of x is 2, so, it is a polynomial of degree 2.

(xiv) x 4−x 3/2 + x−3 In this expression, one of the powers of x is 3/2 which is a fraction. Since it is an expression having fractional power of x, so, it is not a polynomial.

(xv) 2x3 + 3x2+√x−1 In this expression, one of the powers of x is 1⁄2 which is a fraction. Since it is an expression having fractional power of x, so, it is not a polynomial.

Question 2.

Solution:

(i) –7 + x is a polynomial with degree 1. So, it is a linear polynomial.

(ii) 6y is a polynomial with degree 1. So, it is a linear polynomial.

(iii) –z 3 is a polynomial with degree 3. So, it is a cubic polynomial.

(iv) 1 – y – y3 is a polynomial with degree 3. So, it is a cubic polynomial.

(v) x – x3 + x4 is a polynomial with degree 4. So, it is a quartic polynomial

(vi) 1 + x + x 2 is a polynomial with degree 2. So, it is a quadratic polynomial.

(vii) – 6x2 is a polynomial with degree 2. So, it is a quadratic polynomial.

(viii) –13 is a polynomial with degree 0. So, it is a constant polynomial.

(ix) – p is a polynomial with degree 1. So, it is a linear polynomial.

Question 3.

Solution:

(i) The coefficient of x3 in x+3x 2−5x3+x4 is −5.

(ii) The coefficient of x in √3−2√2x+6x2 is −2√2.

(iii) 2x – 3 + x3 = – 3 + 2x + 0x 2 + x3 The coefficient of x2 in 2x – 3 + x3 is 0.

(iv) The coefficient of x in 3/8x2−2/7x+1/6 is −2/7.

(v) The constant term in π/2 x2 +7x−2/5π is −2/5π

RS Aggarwal Solutions Class 9 Chapter 2 - Polynomials Exercise 2.2

Question 1.

Solution:

(i) p(x)=5−4x+2x2

⇒p(0)=(5−4×0+2×02)

=(5−0+0)=5

(ii) p(x)=5−4x+2x2

⇒p(3)=(5−4×3+2×32)

=(5−12+18)=11

(iii) p(x)=5−4x+2x2

⇒p(−2) =[5−4×(−2)+2×(−2) 2] =(5+8+8)=21

Question 2.

Solution:

(i) $p(y)=4+3y-y^2+5y^3$

$\Rightarrow p(0)=(4+3\times0-0^2+5\times0^3)$
$=(4+0-0+0)=4$

(ii) $p(y)=4+3y-y^2+5y^3$

$\Rightarrow p(2)=(4+3\times2-2^2+5\times2^3)$
$=(4+6-4+40)$

$=46$

(iii) $p(y)=4+3y-y^2+5y^3$

$\Rightarrow p(-1)=[4+3\times(-1)-(-1)^2+5\times(-1)^3]$
$=(4-3-1-5)=-5$

Question 3.

Solution:

(i) $f(t)=4t^2-3t+6$

$\Rightarrow f(0)=(4\times0^2-3\times0+6)$
$=(0-0+6)=6$

(ii) $f(t)=4t^2-3t+6$

$\Rightarrow f(4)=(4\times4^2-3\times4+6)$
$=(64-12+6)=58$

(iii) $f(t)=4t^2-3t+6$

$\Rightarrow f(-5)=[4\times(-5)^2-3\times(-5)+6]$
$=(100+15+6)=121$

Question 4.

Solution:

$p(x)=x^3-3x^2+2x$ .....(1)

Putting $x = 0$ in (1), we get

$p(0)=0^3-3\times0^2+2\times0=0$

Thus, $x = 0$ is a zero of $p(x)$.

Putting $x = 1$ in (1), we get

$p(1)=1^3-3\times1^2+2\times1=1-3+2=0$

Thus, $x = 1$ is a zero of $p(x)$.

Putting $x = 2$ in (1), we get

$p(2)=2^3-3\times2^2+2\times2$

$=8-3\times4+4=8-12+4=0$

Thus, $x = 2$ is a zero of $p(x)$.

Question 5.

Solution:

$p(x) = x^3 + x^2 - 9x - 9$ .....(1)

Putting $x = 0$ in (1), we get

$p(0) = 0^3 + 0^2 - 9 \times 0 - 9$

$= 0 + 0 - 0 - 9 = -9 \neq 0$

Thus, $x = 0$ is **not** a zero of $p(x)$.

Putting $x = 3$ in (1), we get

$p(3) = 3^3 + 3^2 - 9 \times 3 - 9$

$= 27 + 9 - 27 - 9 = 0$

Thus, $x = 3$ is a zero of $p(x)$.

Putting $x = -3$ in (1), we get

$p(-3) = (-3)^3 + (-3)^2 - 9 \times (-3) - 9$

$= -27 + 9 + 27 - 9 = 0$

Thus, $x = -3$ is a zero of $p(x)$.

Putting $x = -1$ in (1), we get

$p(-1) = (-1)^3 + (-1)^2 - 9 \times (-1) - 9$

$= -1 + 1 + 9 - 9 = 0$

Thus, $x = -1$ is a zero of $p(x)$.

Question 6.

Solution:

(i) $p(x)=x-4$

$\Rightarrow p(4)=4-4$

$= 0$

Hence, 4 is the zero of the given polynomial.

(ii) $p(x)=(-3)+3$

$\Rightarrow p(3)=0$

Hence, 3 is the zero of the given polynomial.

(iii) $p(x)=2-5x$

$\Rightarrow p(2/5)=2-5\times(2/5)$

$=2-2=0$

Hence, 25 is the zero of the given polynomial.

(iv) $p(y)=2y+1$

$\Rightarrow p(-1/2)=2\times(-1/2)+1$
$=-1+1=0$
Hence, $-1/2$ is the zero of the given polynomial.

Question 7.

Solution:

(i) $p(x)=x^2-3x+2$

$=(x-1)(x-2)$

$\Rightarrow p(1)=(1-1)\times(1-2)$
$=0\times(-1)=0$
Also,
$p(2)=(2-1)(2-2)$
$=(-1)\times0=0$
Hence, 1 and 2 are the zeroes of the given polynomial.

(ii) $p(x)=x^2+x-6$

$\Rightarrow p(2)=2^2+2-6$
$=4-4=0$
Also,
$p(-3)=(-3)^2+(-3)-6$

$=9-9$

=0
Hence, 2 and −3 are the zeroes of the given polynomial.

(iii) $p(x)=x^2-3x$

$\Rightarrow p(0)=0^2-3\times0$

Also,
$p(3)=3^2-3\times3$

$=9-9$

$=0$
Hence, 0 and 3 are the zeroes of the given polynomial.

Question 8.

Solution:

(i) $p(x)=0\Rightarrow x-5=0$

$\Rightarrow x=5$Hence, 5 is the zero of the polynomial $p(x)$.

(ii) $q(x)=0\Rightarrow x+4=0$

(iii) $p(t)=0 \Rightarrow 2t-3=0$

$\Rightarrow t=3/2$

Hence, 3/2 is the zero of the polynomial $p(t)$.

(iv) $f(x)=0 \Rightarrow 3x+1=0$

$\Rightarrow x=-1/3$

Hence, $-1/3$ is the zero of the polynomial $f(x)$.

(v) $g(x)=0 \Rightarrow 5-4x=0$

$\Rightarrow x=5/4$

Hence, 5/4 is the zero of the polynomial $g(x)$.

(vi) $h(x)=0 \Rightarrow 6x-1=0$

$\Rightarrow x=1/6$

Hence, 1/6 is the zero of the polynomial $h(x)$.

(vii) $p(x)=0 \Rightarrow ax+b=0$

$\Rightarrow x=-b/a$

Hence, $-b/a$ is the zero of the polynomial $p(x)$.

(viii) $q(x)=0 \Rightarrow 4x=0$

Hence, 0 is the zero of the polynomial $q(x)$.

(ix) $p(x)=0 \Rightarrow ax=0$

$\Rightarrow x=0$

Hence, 0 is the of the polynomial ( ).

Question 9.

Solution:

It is given that 2 and 0 are the zeroes of the polynomial $f(x)=2x^3-5x^2+ax+b$

$\therefore f(2) = 0$

$\Rightarrow 2\times 2^3-5\times 2^2+a\times 2+b=0$

$\Rightarrow 16-20+2a+b=0$

$\Rightarrow -4+2a+b=0$

$\Rightarrow 2a+b=4$ .....(1)

Also,

$f(0) = 0$

$\Rightarrow 2\times 0^3-5\times 0^2+a\times 0+b=0$

$\Rightarrow 0-0+0+b=0 \Rightarrow b=0$

Putting $b = 0$ in (1), we get

$2a+0=4$

$\Rightarrow 2a=4 \Rightarrow a=2$

Thus, the values of a and b are 2 and 0, respectively.

RS Aggarwal Solutions Class 9 Chapter 2 - Polynomials Exercise 2.5

Question 1.

Solution:

9x2 + 12xy= 3x (3x + 4y)

Question 2.

Solution:

18x2y – 24xyz = 6xy (3x – 4z)

Question 3.

Solution:

27a3b 3 – 45a4b 2= 9a3b 2 (3b – 5a)

Question 4.

Solution:

2a (x + y) – 3b(x + y) = (x + y) (2a – 3b)

Question 5.

Solution:

2x (p2 + q2) + 4y (p2 + q2)= 2(p2 + q2) (x + 2y) Ans

Question 6.

Solution:

x (a – 5) + y (5 – a)

= x (a – 5) -y (a – 5)
= (a – 5) (x – y)

Question 7.

Solution:

4(a + b) – 6 (a + b)2
= 2(a + b) {2 – 3 (a + b)}
= 2(a + b) (2 – 3a – 3b)

Question 8.

Solution:

8(3a – 2b)2 – 10 (3a – 2b)
= 2(3a – 2b) {4 (3a – 2b) – 5}
= 2(3a – 2b) (12a – 8b – 5)

Question 9.

Solution:

x (x + x)3 – 3x2 y (x + y)
= x (x + y) {(x + y)2 – 3xy}
= x (x + y) [x2 + y2 + 2xy – 3xy)
= x (x + y) (x2 + y2 – xy)

Question 10.

Solution:

x 3 + 2x2 + 5x + 10= x2 (x + 2) + 5 (x + 2) = (x + 2) (x2 + 5)

Question 11.

Solution:

x 2 + xy – 2xz – 2yz
= x (x + y) -2z (x + y)
= (x + y) (x – 2z)

Question 12.

Solution:

$a^3 b – a^2b + 5ab – 5b.$
$= b (a^3 – a^2 + 5a – 5)$
$= b \{(a^2 (a – 1) + 5 (a – 1)\}$
$= b (a – 1) (a^2 + 5)$

Question 13.

Solution:

$8 – 4a – 2a^3 + a^4$
$= 4 (2 – a) – a^3 (2 – a)$
$= (2 – a) (4 – a^3)$

Question 14.

Solution:

$x^3 – 2x^2y + 3xy^2 – 6y^3$
$= x^2 (x – 2y) + 3y^2 (x – 2y)$
$= (x – 2y) (x^2 + 3y^2)$ Ans

Question 15.

Solution:

$px – 5q + pq – 5x$
$= px – 5x + pq – 5q$
$= x(p – 5) + q(p – 5)$
$= \{p – 5) (x + q)$

Question 16.

Solution:

$x\ 2 + y – xy – x$
$= x2 – x – xy + y$
$= x (x – 1) – y (x – 1)$
$= (x – 1) (x – y)$

Question 17.

Solution:

$(3a - 1)^2 - 6a + 2$
$= (3a - 1)^2 - 2(3a - 1)$
$= (3a - 1)(3a - 1 - 2)$
$= (3a - 1)(3a - 3)$
$= 3(3a - 1)(a - 1)$

Question 18.

Solution:

$(2x - 3)^2 - 8x + 12$
$= (2x - 3)^2 - 4(2x - 3)$
$= (2x - 3)(2x - 3 - 4)$
$= (2x - 3)(2x - 7)$

Question 19.

Solution:

$a3 + a - 3a2 - 3$
$= a3 - 3a2 + a - 3$
$= a2(a - 3) + 1(a - 3)$
$= (a - 3)(a2 + 1)$

Question 20.

Solution:

$3ax - 6ay - 8by + 4bx$
$= 3ax - 6ay + 4bx - 8by$
$= 3a(x - 2y) + 4b(x - 2y)$
$= (x - 2y)(3a + 4b)$ Ans

Question 21.

Solution:

$abx2 + a2x + b2x + ab$
$= ax(bx + a) + b(bx + a)$
$= (bx + a)(ax + b)$

Question 22.

Solution:

x
3 – x
2 + ax + x – a – 1
= x3 – x
2 + ax – a + x – 1
= x2
(x – 1) + a (x – 1) + 1 (x – 1)
= (x – 1) (x2 + a + 1

Question 24.

Solution:

$ab(x^2 + y^2) - xy(a^2 + b^2)$

$= abx^2 + aby^2 - a^2xy - b^2xy$
$= abx^2 - a^2xy - b^2xy + aby^2$
$= ax(bx - ay) - by(bx - ay)$
$= (bx - ay)(ax - by)$

Question 25.

Solution:

$a^2 + ab(b + 1) + b^3$
$= a^2 + ab^2 + ab + b^3$
$= a(a + b^2) + b(a + b^2)$
$= (a + b^2)(a + b)$ Ans

Question 26.

Solution:

$a^3 + ab(1 - 2a) - 2b^2$
$= a^3 + ab - 2a^2b - 2b^2$
$= a^3 - 2a^2b + ab - 2b^2$
$= a^2(a - 2b) + b(a - 2b)$
$= (a - 2b)(a^2 + b)$

Question 27.

Solution:

$2a^2 + bc - 2ab - ac$
$= 2a^2 - 2ab - ac + bc$
$= 2a(a - b) - c(a - b)$
$= (a - b)(2a - c)$

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$2a (x + y) – 3b(x + y)$

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Question 5.

Solution:

$2x (p^2 + q^2) + 4y (p^2 + q^2)$

$= 2(p^2 + q^2) (x + 2y)$ Ans

Question 6.

Solution:

$x (a – 5) + y (5 – a)$

= x (a – 5) -y (a – 5)
= (a – 5) (x – y)

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$4(a + b) – 6 (a + b)^2$
$= 2(a + b) \{2 – 3 (a + b)\}$
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$x (x + x)^3 – 3x^2 y (x + y)$
$= x (x + y) \{(x + y)^2 – 3xy\}$
$= x (x + y) [x^2 + y^2 + 2xy – 3xy)$
$= x (x + y) (x^2 + y^2 – xy)$

Question 10.

Solution:
$x^3 + 2x^2 + 5x + 10$
$= x^2 (x + 2) + 5 (x + 2)$
$= (x + 2) (x^2 + 5)$

Question 11.

Solution:

x 2 + xy – 2xz – 2yz
= x (x + y) -2z (x + y)
= (x + y) (x – 2z)

Question 12.

Solution:

$a^3 b - a^2b + 5ab - 5b.$
$= b (a^3 - a^2 + 5a - 5)$
$= b \{(a^2 (a - 1) + 5 (a - 1)\}$
$= b (a - 1) (a^2 + 5)$

Question 13.

Solution:

$8 - 4a - 2a^3 + a^4$
$= 4 (2 - a) - a^3 (2 - a)$
$= (2 - a) (4 - a^3)$

Question 14.

Solution:

$x^3 - 2x^2y + 3xy^2 - 6y^3$
$= x^2 (x - 2y) + 3y^2 (x - 2y)$
$= (x - 2y) (x^2 + 3y^2)$ Ans

Question 15.

Solution:

$px - 5q + pq - 5x$
$= px - 5x + pq - 5q$
$= x(p - 5) + q(p - 5)$
$= \{p - 5) (x + q)$

Question 20.

Solution:

$3ax - 6ay - 8by + 4bx$
$= 3ax - 6ay + 4bx - 8by$
$= 3a (x - 2y) + 4b (x - 2y)$
$= (x - 2y) (3a + 4b)$ Ans

Question 21.

Solution:

$abx^2 + a^2x + b^2x + ab$
$= ax (bx + a) + b (bx + a)$
$= (bx + a) (ax + b)$

Question 22.

Solution:
$x^3 – x^2 + ax + x – a – 1$
$= x^3 – x^2 + ax – a + x – 1$
$= x^2 (x – 1) + a (x – 1) + 1 (x – 1)$
$= (x – 1) (x^2 + a + 1)$

Question 23.

Solution:
$2x + 4y – 8xy – 1$
$= 2x – 8xy -1+4y$
$= 2x (1 – 4y) -1 (1 – 4y)$
$= (1 – 4y) (2x – 1)$

Question 24.

Solution:

ab (x2 +y2) – xy (a2 + b2)

= abx2 + aby2 – a2xy – b 2xy

= abx2 – a2xy – b2xy + aby2
= ax (bx – ay) – by (bx – ay)
= (bx – ay) (ax – by)

Question 25.

Solution:

$a^2 + ab\,(b + 1) + b^3$
$= a^2 + ab^2 + ab + b^3$
$= a\,(a + b^2) + b\,(a + b^2)$
$= (a + b^2)\,(a + b)$ Ans

Question 26.

Solution:

$a^3 + ab\,(1 - 2a) - 2b^2$
$= a^3 + ab - 2a^2b - 2b^2$
$= a^3 - 2a^2b + ab - 2b^2$
$= a^2\,(a - 2b) + b\,(a - 2b)$
$= (a - 2b)\,(a^2 + b)$

Question 27.

Solution:

$2a^2 + bc - 2ab - ac$
$= 2a^2 - 2ab - ac + bc$
$= 2a\,(a - b) - c\,(a - b)$
$= (a - b)\,(2a - c)$

Question 28.

Solution:

= a2x 2 + b2y2 + 2abxy + b2x2 + a2y2 – 2bxy

= a2x2 + b2y2 + b2x2 + a2y2

= a2x2 + b2x2 + a2y2 + b2y2
= x2(a2 + b2) + y2(a2 + b2)
= (a2 + b2) (x2 + y2)

Question 29.

Solution:

$a(a + b - c) - bc$
$= a^2 + ab - ac - bc$
$= a(a + b) - c(a + b)$
$(a + b)(a - c)$

Question 30.

Solution:

$a(a - 2b - c) + 2bc$
$= a^2 - 2ab - ac + 2bc$
$= a^2 - ac - 2ab + 2bc$
$= a(a - c) - 2b(a - c)$
$= (a - c)(a - 2b)$

Question 31.

Solution:

$a^2x^2 + (ax^2 + 1)x + a$
$= a^2x^2 + ax^3 + x + a$
$= a^2x^2 + ax^3 + a + x$
$= ax^2(a + x) + 1(a + x)$
$-(a + x)(ax^2 + 1)$ Ans

Question 32.

Solution:

$ab(x^2 + 1) + x(a^2 + b^2)$
$= abx^2 + ab + a^2x + b^2x$
$= abx^2 + a^2x + b^2x + ab$
$= ax(bx + a) + b(bx + a)$
$= (bx + a)(ax + b)$

Question 33.

Solution:

$x^2 - (a + b)x + ab$
$= x^2 - ax - bx + ab$
$= x(x - a) - b(x - a)$
$= (x - a)(x - b)$

Question 34.

Solution:

$$= \left(x - \frac{1}{x}\right)^2 - 3\left(x - \frac{1}{x}\right)$$

$$= \left(x - \frac{1}{x}\right)\left(x - \frac{1}{x} - 3\right) \text{ Ans.}$$