NCERT Solutions for Class 10 Maths Chapter 2 Ex 2.2: NCERT Solutions for Class 10 Maths Chapter 2 Exercise 2.2 focus on understanding the relationship between the zeros of a polynomial and its coefficients. This exercise provides step-by-step solutions to problems involving quadratic, cubic, and linear polynomials, enabling students to verify and analyze these relationships.

Designed as per the CBSE curriculum, these solutions simplify concepts, enhance problem-solving skills, and help students prepare effectively for exams. The structured answers make it easier to grasp the methodology and logic behind solving polynomial-related questions. Ideal for self-study, these solutions are accurate, reliable, and an excellent resource for mastering the topic of polynomials.

NCERT Solutions for Class 10 Maths Chapter 2 Ex 2.2 Overview

NCERT Solutions for Class 10 Maths Chapter 2 Exercise 2.2 are crucial for understanding the relationship between the zeros of polynomials and their coefficients, a fundamental concept in algebra. These solutions provide a step-by-step approach, helping students tackle quadratic, cubic, and linear polynomial problems with ease.

Aligned with the CBSE syllabus, they ensure clarity and precision, aiding in effective exam preparation. By practicing these, students develop strong analytical and problem-solving skills, essential for higher studies. The solutions promote self-learning, reduce errors, and build a solid foundation in polynomials, making them an indispensable tool for scoring well and mastering the topic.

NCERT Solutions for Class 10 Maths Chapter 2 Ex 2.2 Polynomials

Below is the NCERT Solutions for Class 10 Maths Chapter 2 Ex 2.2 Polynomials -

1. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

Solutions:

(i) $x^2 – 2x – 8$

$\Rightarrow x^2 – 4x+2x–8 = x(x–4)+2(x–4) = (x-4)(x+2)$

Therefore, zeroes of polynomial equation x^2–2x–8 are (4, -2)

Sum of zeroes = 4–2 = 2 = -(-2)/1 = -(Coefficient of x)/(Coefficient of x^2)

Product of zeroes = 4×(-2) = -8 =-(8)/1 = (Constant term)/(Coefficient of x^2)

(ii) $4s^2$–4s+1

⇒$4s^2$–2s–2s+1 = 2s(2s–1)–1(2s-1) = (2s–1)(2s–1)

Therefore, zeroes of the polynomial equation $4s^2$–4s+1 are (1/2, 1/2)

Sum of zeroes = (½)+(1/2) = 1 = -(-4)/4 = -(Coefficient of s)/(Coefficient of s^2)

Product of zeros = (1/2)×(1/2) = 1/4 = (Constant term)/(Coefficient of s^2)

(iii) $6x^2$–3–7x

⇒$6x^2$–7x–3 = $6x^2$ – 9x + 2x – 3 = 3x(2x – 3) +1(2x – 3) = (3x+1)(2x-3)

Therefore, zeroes of the polynomial equation $6x^2$–3–7x are (-1/3, 3/2)

Sum of zeroes = -(1/3)+(3/2) = (7/6) = -(Coefficient of x)/(Coefficient of x^2)

Product of zeroes = -(1/3)×(3/2) = -(3/6) = (Constant term) /(Coefficient of x^2)

(iv) $4u^2$+8u

⇒ 4u(u+2)

Therefore, zeroes of the polynomial equation $4u^2$ + 8u are (0, -2)

Sum of zeroes = 0+(-2) = -2 = -(8/4) = = -(Coefficient of u)/(Coefficient of u^2)

Product of zeroes = 0×-2 = 0 = 0/4 = (Constant term)/(Coefficient of u^2)

(v) t^2–15

⇒ t^2 = 15 or t = ±√15

Therefore, zeroes of the polynomial equation t^2 –15 are (√15, -√15)

Sum of zeroes =√15+(-√15) = 0= -(0/1)= -(Coefficient of t) / (Coefficient of t^2)

Product of zeroes = √15×(-√15) = -15 = -15/1 = (Constant term) / (Coefficient of t^2)

(vi) $3x^2$–x–4

⇒ $3x^2–4x+3x–4 = x(3x-4)+1(3x-4) = (3x – 4)(x + 1)$

Therefore, zeroes of the polynomial equation $3x^2 – x – 4$ are (4/3, -1)

Sum of zeroes = (4/3)+(-1) = (1/3)= -(-1/3) = -(Coefficient of x) / (Coefficient of x^2)

Product of zeroes=(4/3)×(-1) = (-4/3) = (Constant term) /(Coefficient of x^2)

2. Find a quadratic polynomial, each with the given numbers as the sum and product of its zeroes, respectively.

(i) 1/4 , -1

Solution:

From the formulas of sum and product of zeroes, we know,

Sum of zeroes = $\alpha+\beta$

Product of zeroes = $\alpha\ \beta$

Sum of zeroes = $\alpha+\beta$ = 1/4

Product of zeroes = $\alpha\ \beta$ = -1

∴ If α and β are zeroes of any quadratic polynomial, then the quadratic polynomial equation can be written directly as

$x^2–(\alpha+\beta)x +\alpha\beta = 0$

$x^2–(1/4)x +(-1) = 0$

$4x^2–x-4 = 0$

Thus, **$4x^2–x–4$** is the quadratic polynomial.

(ii)√2, 1/3

Solution:

Sum of zeroes = $\alpha + \beta = \sqrt{2}$

Product of zeroes = $\alpha\ \beta$ = 1/3

∴ If α and β are zeroes of any quadratic polynomial, then the quadratic polynomial equation can be written directly as

$x^2–(\alpha+\beta)x +\alpha\beta = 0$

$x^2 - (\sqrt{2})x + (1/3) = 0$

$3x^2 - 3\sqrt{2}x + 1 = 0$

Thus, $3x^2 - 3\sqrt{2}x + 1$ is the quadratic polynomial.

(iii) 0, √5

Solution:

Given,

Sum of zeroes = α+β = 0

Product of zeroes = α β = √5

∴ If α and β are zeroes of any quadratic polynomial, then the quadratic polynomial equation can be written directly

as

$x^2 - (\alpha+\beta)x + \alpha\beta = 0$

$x^2 - (0)x + \sqrt{5} = 0$

Thus, $x^2 + \sqrt{5}$ is the quadratic polynomial.

(iv) 1, 1

Solution:

Given,

Sum of zeroes = α+β = 1

Product of zeroes = α β = 1

∴ If α and β are zeroes of any quadratic polynomial, then the quadratic polynomial equation can be written directly as

$x^2 - (\alpha+\beta)x + \alpha\beta = 0$

$x^2 - x + 1 = 0$

Thus, $x^2 - x + 1$ is the quadratic polynomial.

(v) -1/4, 1/4

Solution:

Given,

Sum of zeroes = α+β = -1/4

Product of zeroes = α β = 1/4

∴ If α and β are zeroes of any quadratic polynomial, then the quadratic polynomial equation can be written directly as

$\mathbf{x^2-(\alpha+\beta)x+\alpha\beta = 0}$

$\mathbf{x^2-(-1/4)x+(1/4) = 0}$

$\mathbf{4x^2+x+1 = 0}$

Thus, $\mathbf{4x^2+x+1}$ is the quadratic polynomial.

(vi) 4, 1

Solution:

Given,

Sum of zeroes = α+β =4

Product of zeroes = αβ = 1

∴ If α and β are zeroes of any quadratic polynomial, then the quadratic polynomial equation can be written directly as

$\mathbf{x^2-(\alpha+\beta)x+\alpha\beta = 0}$

$\mathbf{x^2-4x+1 = 0}$

Thus, $\mathbf{x^2-4x+1}$ is the quadratic polynomial.

Benefits of Using NCERT Solutions for Class 10 Maths Chapter 2 Ex 2.2 Polynomials

Here are the benefits of using NCERT Solutions for Class 10 Maths Chapter 2 Ex 2.2 (Polynomials):

1. Comprehensive Understanding of Concepts

NCERT Solutions are designed to provide clear and precise explanations for all problems in Ex 2.2. They simplify complex polynomial concepts like zeros of polynomials and their graphical representations, making them easy to understand.

2. Aligned with the CBSE Curriculum

The solutions are tailored to the CBSE syllabus, ensuring students cover all topics required for exams without wasting time on irrelevant material.

3. Step-by-Step Solutions

Every problem in Exercise 2.2 is solved in a step-by-step manner, helping students grasp the methodology for solving polynomial-related questions.

4. Helps in Exam Preparation

NCERT Solutions provide standard answers that are expected in exams, allowing students to score full marks by understanding the correct approach to answer each question.

5. Builds a Strong Foundation

This exercise focuses on evaluating and verifying relationships between zeros and coefficients of polynomials, which is fundamental for higher-level mathematics in Class 11 and competitive exams.

6. Time Management

By practicing these solutions, students learn to solve polynomial problems efficiently, saving valuable time during exams.