ODM EDUCATIONAL GROUP
Changing your Tomorrow

POLYNOMIALS

PPT-2

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 02
CHAPTER NAME : POLYNOMIALS

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Learning outcome

1..Students will be able to Students will be able to **know the r**elationship between zeroes andcoefficients of a quadratic polynomial

2.. Students will be able to solve questions involving relationship betweenzeroes and coefficients of a quadratic polynomial

PREVIOUS KNOWLEDGE TEST

- 1. ***A <u>polynomial p(x) in one variable</u> x*** is analgebraicexpression in x of the form

  p(x) = $a_\eta x^n$ +$a_{n-1}x^{n-1}_{+\cdots}a_1 x + a_0$where $a_0, a_1, a_2, \ldots, a_n$ are **constants(realnumbers**) and $a_n \neq 0$.

  $a_0, a_1, a_2, \ldots, a_n$ are respectively the **coefficients and n** is called **the degree of the polynomia**l. Each of $a_\eta x^n$,$a_{n-1}x^{n-1}_{\ldots}$ $\ldots$, , a_0 is called a **term** of the polynomial $p(x)$.

2. Every **linear polynomial** in one variable has a**unique zero**, a non-zero constant polynomialhas no zero, and every real number is a zero ofthe zero polynomial

3 A **quadratic polynomial** can have at most **2 zeroes** and **a cubic polynomia**l can have atmost **3 zeroes**

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4. General form of linear polynomials $ax + b\ where\ a \neq 0$
5. General from of quadratic polynomials $ax^2 + bx + c$ where a≠O
6. General form of cubic polynomial$ax^3 + bx^2 + cx + d, where a\ a \neq 0$

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Relationship between zeros and coefficient
https://youtu.be/5FR1Hix5WLk{8.06}

: Find the zeroes of the quadratic polynomial x^2 + 7x + 10, and verify the relationship between the zeroes and the coefficients.

Solution : We have x^2 + 7x + 10

= (x + 2)(x + 5)

So, the value of x^2 + 7x + 10 is zero when x + 2 = 0 or x + 5 = 0, i.e., when x = – 2 or x = –5. Therefore, the zeroes of x^2 + 7x + 10 are – 2 and – 5.

Now,

sum of zeroes = (–2 (–5) = -(7) =- (Coefficient of x)/ Coefficient of x^2

product of zeroes = -2 X(-5) =10 =10/1= Constant term/ Coefficient of x^2

(iii) $6x^2 - 3 - 7x$

$= 6x^2 - 7x - 3$

$= 6x^2 - 9x + 2x - 3$

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

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

The value of $6x^2 - 7x - 3$ is zero if $3x + 1 = 0$ or $2x - 3 = 0$.

$\Rightarrow x = -\frac{1}{3}$ or $x = \frac{3}{2}$.

Therefore, the zeroes of $6x^2 - 7x - 3$ are $-\frac{1}{3}$ and $\frac{3}{2}$. Now

$$\text{Sum of zeroes} = -\frac{1}{3} + \frac{3}{2} = \frac{-2+9}{6} = \frac{7}{6} = \frac{-(-7)}{6} = \frac{-(\text{Cofficient of } x)}{\text{Cofficient of } x^2}$$

$$\text{Product of zeroes} = \left(-\frac{1}{3}\right) \times \frac{3}{2} = -\frac{1}{2} = \frac{-3}{6} = \frac{\text{Constant term}}{\text{Cofficient of } x^2}$$

: Find a quadratic polynomial, the sum and product of whose zeroes are – 3 and 2, respectively.

Solution : Let the quadratic polynomial be ax^2 + bx + c, and its zeroes be α and ß. We have α + ß = – 3 = -b /a , and αß = 2 = c/ a . If a = 1, then b = 3 and c = 2.

So, one quadratic polynomial which fits the given conditions is x^2 + 3x + 2..

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:HOME ASSIGNMENT Ex. 2.2 Q. No 1 &2 & .

AHA

1. If α, β are the two zeroes of the polynomial $6y^2 - 7y + 2$, find a quadratic polynomial whose zeroes are $1/\alpha$ and $1/\beta$.

2. . If α,β are the two zeroes of the polynomial $3x^2 - 4x + 1$, find a quadratic polynomial whose zeroes are $\alpha 2$ & $\beta 2$.

3. If α,β are the two zeroes of the polynomial $3x^2 + 2x + 1$, find the quadratic polynomial whose zeroes are $1 - \alpha/1+\alpha$ & $1-\beta/1+\beta$

4. . If α,β are the two zeroes of the polynomial $2x^2 - 5x + 7$, find the quadratic polynomial whose zeroes are $2\alpha + 3\beta$ and $3\alpha + 2\beta$.

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THANKING YOU

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