Exercise VSAQs

Question 1: Define zero or root of a polynomial

Solution:

zero or root, is a solution to the polynomial equation, f(y) = 0.

It is that value of y that makes the polynomial equal to zero.

Question 2: If x = 1/2 is a zero of the polynomial f(x) = 8x^3 + ax^2 - 4x + 2, find the value of a.

Solution:

If x = 1/2 is a zero of the polynomial f(x), then f(1/2) = 0

8(1/2)^3 + a(1/2)^2 - 4(1/2) + 2 = 0

8 x 1/8 + a/4 - 2 + 2 = 0

1 + a/4 = 0

a = -4

Question 3: Write the remainder when the polynomial f(x) = x^3 + x^2 - 3x + 2 is divided by x + 1.

Solution:

Using factor theorem,

Put x + 1 = 0 or x = -1

f(-1) is the remainder.

Now,

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

= -1 + 1 + 3 + 2

= 5

Therefore 5 is the remainder.

Question 4: Find the remainder when x^3 + 4x^2 + 4x-3 if divided by x

Solution:

Using factor theorem,

Put x = 0

f(0) is the remainder.

Now,

f(0) = 0^3 + 4(0)^2 + 4x0 -3 = -3

Therefore -3 is the remainder.

Question 5: If x+1 is a factor of x^3 + a, then write the value of a.

Solution:

Let f(x) = x^3 + a

If x+1 is a factor of x^3 + a then f(-1) = 0

(-1)^3 + a = 0

-1 + a = 0

or a = 1

Question 6: If f(x) = x^4 - 2x^3 + 3x^2 – ax – b when divided by x – 1, the remainder is 6, then find the value of a+b.

Solution:

From the statement, we have f(1) = 6

(1)^4 - 2(1)^3 + 3(1)^2 – a(1) – b = 6

1 – 2 + 3 – a - b = 6

2 – a - b = 6

a + b = -4