Chapter:04

1.If f(x) is a polynomial,What will be the remainder if we divide f(x) by (x-a)?

[Proof:From Remainder theorem,we know that The remainder of the division of a polynomial f(x) by a linear polynomial {x-a} is equal to f(a)]

১.f(x) যদি বহুপদী হয়, তবে আমরা f (x) কে (x-a) দিয়ে ভাগ করলে ভাগশেষ কী হবে?

[প্রুফ: ভাগশেষ উপপাদ্য থেকে, আমরা জানি যে একটি রৈখিক বহুপদী f (x)-কে (x-a) দ্বারা ভাগ করলে ভাগশেষ f (a) এর সমান হয়]

a.f(x) (ans)b.f(a)

c.f(-x) d.f(-a)

2.What is the degree of the following polynomial:3x^2+x^3+1=0?

[Proof:  The degree of a polynomial is the highest of the degrees of the polynomial's monomials with non-zero coefficients]

2. নিম্নলিখিত বহুপদীর মাত্রা কত: 3x ^ 2 x ^ 3 1 = 0?

[প্রুফ: বহু-বহিরাগতের ডিগ্রিটি বহিরাগতের মনোমিয়ালগুলির ডিগ্রি সর্বাধিক হ'ল শূন্য সহগ সহ]

a.1 b.2

(ans).3 d.4

3.If a polynomial is ax^2+bx+c=0;What is the solution of this equation?

৩.একটি বহুপদী যদি ax^2+bx+c=0 হয়; তবে এই সমীকরণটির সমাধান কী?

[Proof: ax^2+bx+c=0

Or,4a^2x^2+4abx+4ac=0,{multiplying both sides with 4a}

Or,(2ax)^2+2.2ax.b+b^2-b^2+4ac=0

Or,(2ax+b)^2=b^2-4ac

Or,2ax+b=±√(b^2-4ac)

So,x={-b±√(b^2-4ac)}\2a ]

(ans)a.{-b±√(b^2-4ac)}\2a b.{b±√(b^2-4ac)}\2a

c.{-b±√(b^2-4ac)}\4a d.{-a±√(b^2-4bc)}\2a

4. If a polynomial is ax^2+bx+c=0; What is the discriminant of the polynomial?

[Proof: The discriminant of a polynomial is a quantity that depends on the coefficients. The solution of the polynomial equation given above is x={-b±√(b^2-4ac)}\2a

Here, the portion below is discriminating the solution of the polynomial,

As a result, b^2-4ac is the discriminant]

a. b^2+4ac b.4ac

(ans)c. b^2-4ac 2a

5. If a polynomial is a1x^2+b1x+c1=0 and another polynomial is a2x^2+b2x+c2=0; What is the condition existing one common root between the equations?

[Proof: Check from the textbook]

৫. একটি বহুপদী যদি a1x^2+b1x+c1=0 হয় এবং অন্য একটি বহুপদী হয় a2x^2+b2x+c2=0; সমীকরণগুলির মধ্যে একটি সাধারণ মূলের শর্তটি কী? [পাঠ্যবই থেকে]

(ans)a.(a1b2-a2b1)(b1c2-b2c1)=(c1a2-a1c2)^2

b.(a1b2-a2b1)(b1c2-b2c1)=(c1a2-a1c2)

c.(a1b2-a2b1)(b1c2-b2c1)^2=(c1a2-a1c2)

d.(a1b2-a2b1)^2(b1c2-b2c1)=(c1a2-a1c2)

6. If a polynomial is ax^2+bx+c=0 and two roots of the equation are α and β.What is the value of α+β?

৬. একটি বহুপদী যদি ax^2+bx+c=0 হয় এবং সমীকরণের দুটি মূল α এবং β হয়, তবে α + β এর মান কত?

[Proof:As two roots of the equation are α and β.

So,x= α |or,x= β

Or,x- α=0 |or,x-β=0

Or,(x- α)(x- β)=0

Or,x^2- αx- βx+ αβ=0

Or,x^2-(α+β)x+ αβ=0…………..(1)

Again, ax^2+bx+c=0

Or,x^2-(-b\a)x+(c\a)=0……………….(2)

Comparing equation (1) and (2);

α+β= -b\a and, αβ= c\a ]

a.b\a (ans)b. -b\a

c.c\a d. –c\a

7. If a polynomial is ax^2+bx+c=0 and two roots of the equation are α and β.What is the value of αβ?

৭. যদি বহুপদীটি ax^2+bx+c=0 হয় এবং সমীকরণের দুটি মূল α এবং β হয়। αβ এর মান কত?

[Proof:As two roots of the equation are α and β.

So,x= α |or,x= β

Or,x- α=0 |or,x-β=0

Or,(x- α)(x- β)=0

Or,x^2- αx- βx+ αβ=0

Or,x^2-(α+β)x+ αβ=0…………..(1)

Again, ax^2+bx+c=0

Or,x^2-(-b\a)x+(c\a)=0……………….(2)

Comparing equation (1) and (2);

α+β= -b\a and, αβ= c\a ]

a.b\a b. -b\a

(ans)c. c\a d. –c\a

8. If a polynomial is ax^3+bx^2+cx=d=0 and three roots of the equation are α,β and γ .What is the value of α+β+ γ?

৮. যদি একটি বহুপদীটি ax^3+bx^2+cx=d=0 হয় এবং সমীকরণের তিনটি মূল α, β এবং γ হয় α + β + γ এর মান কত?

[Proof: ax^3+bx^2+cx=d=0

As three roots of the equation are α,β and γ

So,x= α |or,x= β |or,x= γ

x- α=0 |or,x- β=0 |or,x- γ=0

Or,(x- α)(x- β)(x- γ)=0

So,x^3-( α+β+ γ)x^2+(αβ+βγ+αγ)x+αβγ =0………(1)

Again, ax^3+bx^2+cx=d=0

Or,x^3+(b\a)x^2+(c\a)x+(d\a)=0………(2)

Comparing equation (1) and (2);

α+β+ γ= –b\a αβ+βγ+αγ= c\a and, αβγ = –d\a ]

(ans)a. –b\a b.c\a

c. –d\a d.d\a

9.If a polynomial is ax^3+bx^2+cx=d=0 and three roots of the equation are α,β and γ .What is the value of αβ+βγ+αγ?

৯। যদি একটি বহুপদী ax^3+bx^2+cx=d=0 হয় এবং সমীকরণের তিনটি মূল α, β এবং γ হয়। αβ + βγ + αγ এর মান কত?

[Proof: ax^3+bx^2+cx=d=0

As three roots of the equation are α,β and γ

So,x= α |or,x= β |or,x= γ

x- α=0 |or,x- β=0 |or,x- γ=0

Or,(x- α)(x- β)(x- γ)=0

So,x^3-( α+β+ γ)x^2+(αβ+βγ+αγ)x+αβγ =0………(1)

Again, ax^3+bx^2+cx=d=0

Or,x^3+(b\a)x^2+(c\a)x+(d\a)=0……(2)

Comparing equation (1) and (2);

α+β+ γ= –b\a αβ+βγ+αγ= c\a and,αβγ = –d\a ]

a. –b\a (ans)b.c\a

c. –d\a d.d\a

10. If a polynomial is ax^3+bx^2+cx=d=0 and three roots of the equation are α,β and γ .What is the value of αβγ?

১০. বহুপদীটি যদি ax^3+bx^2+cx=d=0 হয় এবং সমীকরণের তিনটি মূল হয় α, β এবং γ। αβγ এর মান কত?

[Proof: ax^3+bx^2+cx=d=0

As three roots of the equation are α,β and γ

So,x= α |or,x= β |or,x= γ

x- α=0 |or,x- β=0 |or,x- γ=0

Or,(x- α)(x- β)(x- γ)=0

So,x^3-( α+β+ γ)x^2+(αβ+βγ+αγ)x+αβγ =0………(1)

Again, ax^3+bx^2+cx=d=0

Or,x^3+(b\a)x^2+(c\a)x+(d\a)=0………….(2)

Comparing equation (1) and (2);

α+β+ γ= –b\a αβ+βγ+αγ= c\a and,αβγ = –d\a ]

a. –b\a b.c\a

(ans)c. –d\a d.d\a

11.a^3+b^3+c^3-3abc=?

[Proof:Check out from the textbook]

[প্রুফ: পাঠ্যপুস্তক থেকে দেখুন]

a. .(a+b+c)(a^2+b^2+c^2-3ab-3bc-3ca)

b.(a+b+c)^2(a^2+b^2+c^2-ab-bc-ca)

c.(a+b+c)(a^2+b^2+c^2-ab-bc-ca)^2

(ans)d.(a+b+c)(a^2+b^2+c^2-ab-bc-ca)