Chapter:7

1.tan−1(x) + tan−1(y) =?

[Proof: Let, tan−1(x)=A & tan−1(y) = B

Or,x=tanA & y=tanB

We know that (আমরা জানি),

tan(A+B) = (tanA+tanB)\(1-tanA . tanB)

or, A+B = tan−1[(tanA+tanB)\(1-tanA . tanB)]

Or,tan−1(x) + tan−1(y) = tan−1{(x + y)\(1 – xy)} ]

(ans)a. tan−1{(x + y)\(1 – xy)} b. tan−1{(x - y)\(1 + xy)}

c.tan−1[x√(1 – y^2) + y√(1 – x^2)] d. tan−1[x√(1 – y^2) - y√(1 – x^2)]

2. tan−1(x) - tan−1(y) =?

[Proof: Let, tan−1(x)=A & tan−1(y) = B

Or,x=tanA & y=tanB

We know that (আমরা জানি),

tan(A-B) = (tanA-tanB)\(1+tanA . tanB)

or, A-B = tan−1[(tanA-tanB)\(1+tanA . tanB)]

Or,tan−1(x) - tan−1(y) = tan−1{(x - y)\(1 + xy)} ]

a. tan−1{(x + y)\(1 – xy)} (ans)b. tan−1{(x - y)\(1 + xy)}

c.tan−1[x√(1 – y^2) + y√(1 – x^2)] d. tan−1[x√(1 – y^2) - y√(1 – x^2)]

3.Which one from the below is correct?

৩। নীচের কোনটি সঠিক?

[Proof: Let, tan−1(x)=A

Or, x=tanA

We know that (আমরা জানি),

tan2A = 2tanA\{1-(tanA)^2}

or,2A = tan−1[2tanA\{1-(tanA)^2}]

So, 2 tan−1(x) = tan−1{2x\(1-x^2)}

a.2 sin−1(x) = sin−1 (2x\(1 + x^2)) b. 2 cos−1(x) = cos−1{(1-x^2)\(1+x^2)}

(ans) c. 2 tan−1(x) = tan−1{2x\(1-x^2)} d. 2 tan−1(x) = tan−1{2x\(1+x^2)}

4. Which one from the below is correct?

৪। নীচের কোনটি সঠিক?

[Proof: Let, tan−1(x)=A

Or, x=tanA

We know that (আমরা জানি),

Sin2A = 2tanA\{1+(tanA)^2}

or,2A = sin−1[2tanA\{1+ (tanA)^2}]

So, 2 tan−1(x) = sin−1{2x\(1+ x^2)} ]

(ans)a.2 tan−1(x) = sin−1 (2x\(1 + x^2)) b. 2 cos−1(x) = cos−1{(1-x^2)\(1+x^2)}

c. 2 sin−1(x) = sin−1{2x\(1-x^2)} d. 2 tan−1(x) = tan−1{2x\(1+x^2)}

5. Which one from the below is correct?

৫। নীচের কোনটি সঠিক?

[Proof: Let, tan−1(x)=A

Or, x=tanA

We know that (আমরা জানি),

cos2A ={1-(tanA)^2}\{1+ (tanA)^2}

or,2A= cos−1{1-(tanA)^2}\{1+ (tanA)^2}

So, 2 tan−1(x) = cos−1{(1-x^2)\(1+x^2)} ]

a. 2 cos−1(x) = cos−1{(1-x^2)\(1+x^2)}

b. 2 tan−1(x) = tan−1{2x\(1+x^2)}

c. 2 sin−1(x) = sin−1{2x\(1-x^2)}

(ans)d. 2 tan−1(x) = cos−1{(1-x^2)\(1+x^2)}

6. sin−1(x) + sin−1(y) =?

[Proof: Let, sin−1(x)=A & sin−1(y) =B

Or,x = sinA & y = sinB

We know that (আমরা জানি), sin(A + B) = sinA . cosB + cosA . sinB

Or, sin(A + B) = sinA. √{1 – (sinB)^2} + sinB . √{1 – (sinA)^2}

Or,(A + B) = sin−1[sinA. √{1 – (sinB)^2} + sinB . √{1 – (sinA)^2}]

So, sin−1(x) + sin−1(y) = sin−1[x√(1 – y^2) + y√(1 – x^2)] ]

a. sin−1{(x + y)\(1 – xy)} b. sin−1{(x - y)\(1 + xy)}

(ans)c.sin−1[x√(1 – y^2) + y√(1 – x^2)] d. sin−1[x√(1 – y^2) - y√(1 – x^2)]

7. sin−1(x) - sin−1(y) =?

[Proof: Let, sin−1(x)=A & sin−1(y) =B

Or,x = sinA & y = sinB

We know that (আমরা জানি), sin(A - B) = sinA . cosB - cosA . sinB

Or, sin(A - B) = sinA. √{1 – (sinB)^2} - sinB . √{1 – (sinA)^2}

Or,(A - B) = sin−1[sinA. √{1 – (sinB)^2} - sinB . √{1 – (sinA)^2}]

So, sin−1(x) - sin−1(y) = sin−1[x√(1 – y^2) - y√(1 – x^2)] ]

a. sin−1{(x + y)\(1 – xy)} b. sin−1{(x - y)\(1 + xy)}

c.sin−1[x√(1 – y^2) + y√(1 – x^2)] (ans)d. sin−1[x√(1 – y^2) - y√(1 – x^2)]

8. cos−1(x) + cos−1(y) = ?

[Proof: Let, cos−1(x)=A & cos−1(y) =B

Or,x = cosA & y = cosB

We know that (আমরা জানি), cos(A + B) = cosA . cosB - sinA . sinB

Or, cos(A + B) = cosA . cosB -√[{1-(cosA)^2}{1 – (cosB)^2}]

Or, (A + B) = cos−1[cosA . cosB -√[{1-(cosA)^2}{1 – (cosB)^2}]]

So, cos−1(x) + cos−1(y) = cos−1[xy - √{(1 – x^2)(1 – y^2)}] ]

a. cos−1[x√(1 – y^2) + y√(1 – x^2)]

b. cos−1[x√(1 – y^2) - y√(1 – x^2)]

(ans)c. cos−1[xy - √{(1 – x^2)(1 – y^2)}]

d. cos−1[xy + √{(1 – x^2)(1 – y^2)}]

9. cos−1(x) - cos−1(y) = ?

[Proof: Let, cos−1(x)=A & cos−1(y) =B

Or,x = cosA & y = cosB

We know that (আমরা জানি), cos(A - B) = cosA . cosB + sinA . sinB

Or, cos(A - B) = cosA . cosB + √[{1-(cosA)^2}{1 – (cosB)^2}]

Or, (A - B) = cos−1[cosA . cosB + √[{1-(cosA)^2}{1 – (cosB)^2}]]

So, cos−1(x) - cos−1(y) = cos−1[xy + √{(1 – x^2)(1 – y^2)}] ]

a. cos−1[x√(1 – y^2) + y√(1 – x^2)]

b. cos−1[x√(1 – y^2) - y√(1 – x^2)]

c. cos−1[xy - √{(1 – x^2)(1 – y^2)}]

(ans)d. cos−1[xy + √{(1 – x^2)(1 – y^2)}]

10. 3 sin−1(x) =?

[Proof: Let, sin−1(x)=A

Or, x=sinA

We know that (আমরা জানি),

Sin3A = 3sinA – 4 (sinA)^3

Or,3A = sin−1{3 sinA – 4 (sinA)^3}

So, 3 sin−1(x) = sin−1{3x – 4x^3} ]

(ans)a. sin−1{3x – 4x^3} b. sin−1{4x^3 – 3x}

c. sin−1{3x + 4x^3} d. sin−1{(3x – x^3)\(1 – 3 . x^2)}

11. 3 cos−1(x) =?

[Proof: Let, cos(x)=A

Or, x=cosA

We know that (আমরা জানি),

cos3A = 4 (cos)^3 - 3 cosA

Or,3A = cos−1{4 (cos)^3 - 3 cosA}

So, 3 cos−1(x) = cos−1{4x^3 – 3x} ]

a. cos−1{3x – 4x^3} (ans)b. cos−1{4x^3 – 3x}

c. cos−1{3x + 4x^3} d. cos−1{(3x – x^3)\(1 – 3 . x^2)}

12. 3tan−1(x)=?

[Proof: Let, tan−1(x)=A

Or, x=tanA

We know that (আমরা জানি),

tan3A = {3 tanA – (tanA)^3}\{1 – 3 (tanA)^2}

or,3A= tan−1[3 tanA – (tanA)^3}\{1 – 3 (tanA)^2]

So, 3tan−1(x) = tan−1{(3x – x^3)\(1 – 3 . x^2)} ]

a. tan−1{3x – 4x^3} b. tan−1{4x^3 – 3x}

c. tan−1{3x + 4x^3} (ans)d. tan−1{(3x – x^3)\(1 – 3 . x^2)}

13. sin−1(x) + cos−1(x) =?

[Proof: Let, sin−1(x) = θ

Or,x = sin θ

Or,x = cos{(π\2) – θ}

Or, (π\2) – θ = cos−1(x)

Or, θ + cos−1(x) = π\2

So, sin−1(x) + cos−1(x) = π\2 ]

a. π (ans)b. π\2

c. 0 d.2π

14. sec−1 (x) + cosec−1(x) = ?

[Proof: Let, sec−1(x) = θ

Or,x = sec θ

Or,x = cosec{(π\2) – θ}

Or, (π\2) – θ = cosec−1(x)

Or, θ + cosec−1(x) = π\2

So, sec−1(x) + cosec−1(x) = π\2 ]

a. π (ans)b. π\2

c. 0 d.2π

15.tan−1 (x) + cot−1(x) = ?

[Proof: Let, tan−1(x) = θ

Or,x = tan θ

Or,x = cot{(π\2) – θ}

Or, (π\2) – θ = cot−1(x)

Or, θ + cot−1(x) = π\2

So, tan−1(x) + cot−1(x) = π\2 ]

a. π (ans)b. π\2

c. 0 d.2π

16.If sinθ = 0, θ=?

১৬। যদি sinθ = 0 হয়, θ=?

[Proof: Check out from text book from the textbook]

[প্রুফ: পাঠ্যবই থেকে দেখুন]

(ans)a. n π b.(2n+1) . π\2

c.2nπ d.(2n+1) . π

17.If cosθ = 0, θ=?

১৭। যদি cosθ = 0 হয়, θ=?

[Proof: Check out from text book from the textbook]

[প্রুফ: পাঠ্যবই থেকে দেখুন]

a. n π (ans)b.(2n+1) . π\2

c.2nπ d.(2n+1) . π

17.If tanθ = 0, θ=?

[Proof: Check out from text book from the text book]

১৭। যদি tanθ = 0 হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

(ans)a. n π b.(2n+1) . π\2

c.2nπ d.(2n+1) . π

18.If sinθ = 1, θ=?

[Proof: Check out from text book from the textbook]

১৮। যদি sinθ = 1 হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

a. n π b.(2n+1) . π\2

(ans)c. (4n+1). π\2 d. .(4n-1). π\2

19.If sinθ = -1, θ=?

[Proof: Check out from text book from the textbook]

১৯। যদি sinθ = -1 হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

a. n π b.(2n+1) . π\2

c. (4n+1). π\2 (ans)d.(4n-1). π\2

20. If cosθ = 1, θ=?

[Proof: Check out from text book from the textbook]

২০। যদি cosθ = 1 হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

a. n π b.(2n+1) . π\2

(ans) c.2nπ d.(2n+1) . π

22. If cosθ = -1, θ=?

[Proof: Check out from text book from the textbook]

২২। যদি cosθ = -1 হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

a. n π b.(2n+1) . π\2

c.2nπ (ans)d.(2n+1) . π

23. If tanθ = tan α, θ=?

[Proof: Check out from text book from the text book]

২৩। যদি tanθ = tan α হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

(ans)a. n π + α b. 2nπ ± α

c. n π + (-1)^n . α d. n π + (1)^n . α

24.If cosθ = cos α, θ=?

[Proof: Check out from text book from the text book]

২৪। যদি cosθ = cos α হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

a. n π + α (ans)b. 2nπ ± α

c. n π + (-1)^n . α d. n π + (1)^n . α

25.If sinθ = sin α, θ=?

[Proof: Check out from text book from the textbook]

২৫। যদি sinθ = sin α হয়, θ=?

[প্রুফ: পাঠ্যবই থেকে দেখুন]

a. n π + α b. 2nπ ± α

(ans) c. n π + (-1)^n . α d. n π + (1)^n . α