



**BACHELOR IN INFORMATION TECHNOLOGY**

Submitted by: Submitted to:

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1. Find the Domain and Range of f(x)= .

SOLLUTION:

Or,2-x-x2=0

or, + x - 2 =0

or, + 2x – x -2 = 0

or, x(x+2) - 1(x+2) =0

or, (x+2) (x-1) =0

Either, x = -2 or, x =1

Then, The interval will be (-∞,-2)U(-2,1)U(1,∞).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  | (2+x) |  | (1-x) |  |  | (2+x)(1-x) |
|  |  |  |  |  |  | |  |
|  | (-∞,-2) | - |  | + |  | | - |
|  |  |  |  |  |  | |  |
|  | (-2,1) | + |  | + |  | | + |
|  |  |  |  |  |  | |  |
|  | (1,∞) | + |  | - |  | | - |
|  |  |  |  |  |  |  |  |

Here, only the positive sign is taken. So, the Domain is (-2,1).

For range, squaring both sides for the equation; we get,

Y=

or, y=

or, y=

or, y

or, y

or, (squaring on both sides)

or,

or,

or, Here, y is a positive root so,

2. Find the solution of:

SOLLUTION

Integration on both sides, we get,

= - log(y+1) +c ()

3. Differentiate:

SOLLUTION:

Differentiating on both sides with respect to t ;we get,

)

4. ?

We have,∫ f”(x ) =F’(x) Now ,Integrating both sides, we get

dx

or, f'(x) =

or, f=

2+ C

Again, f(x)

Integrating on both sides, we get;

or, f'(x) =

or, f(x)= + C

+ C

Q.n.5

Find the area enclosed between x-axis, the curve and the ordinates x=1 and x=2.

SOLLUTION:

Given equation of a curve is

Co-ordinates for lower limit and upper limit are , x=1 and 2.

y =

y =

y=-

y= [4- 4+10]-[]

y=

y=

Therefore, y= i.e. Area= 5.75 sq.unit

The area enclosed between x-axis, for the curve y= is 5.75 sq.unit.

Q.n.6 Find (Antiderivatives)

SOLLUTION

= dx

= dx

=

=+c

Q.n.7 State and Verify mean value theorem for f(x) = x3 -x in [0,2]

SOLLUTION

If f(x) be any function such that;

* F(x) is continuous on closed interval [a,b]
* f (x) is differentiable on open interval (a,b)

Then, there exists some number c in (a,b) such that,

f'(c)=

For verification,

f(x)= x3-x on [0,2]

Since, every polynomial function is continuous so f(x) is continuous.

Then, f(0)= 03-0

=0

f(2)= 23-2 =6

Now, f'(x)

= 3x2-1

Then at [0,2]

= -1

Again, according to mean value theorem,

f'(x)=

Or, 3c2-1=

Or, 3c2-1= 3

Or, c2=

Or, c=±

c= ± But, C = ꜫ (0,2)

Hence, mean value theorem is verified.