Topic __

Dato

Applied Mathematics - I

Assignment

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Sec-B

Ans1 du = Scc2x

doc (tanx tony + tonz)

 $\frac{\partial u}{\partial x} = \frac{2 \sin x \cos x}{\cos^2 x} \left[\frac{1}{\tan x + \tan y} + \tan z \right]$

= 2 tons tons + tony + tons

Stril lastly,

Sinzy 29 11 = atongy tanx + tony + tonz

Sinzz du = 2tonz dz tonoc + tony + tonz

LHS.

Sinax du + sinay du + sin dz du dz

= a [toux + tony + tonz]

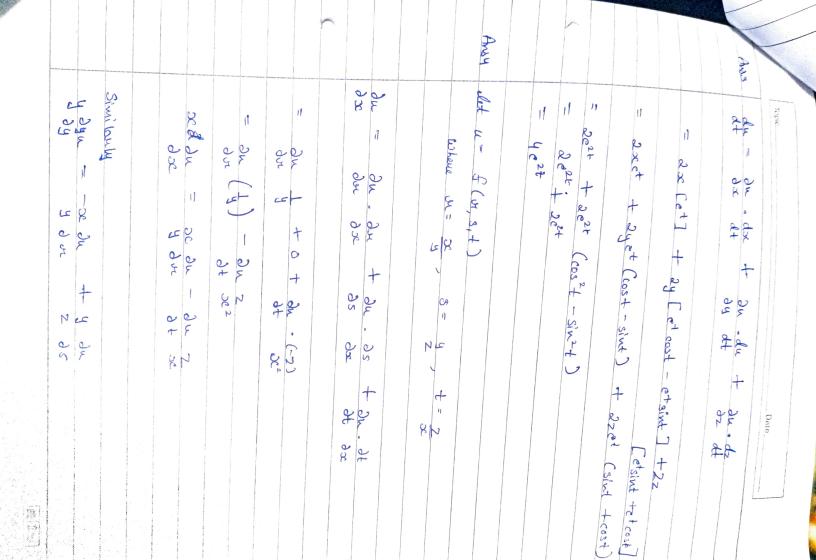
= 2

LHS = RHS

Hence Puroxed

Topic 32 = d [d (dog (x2 + y2 + 22))] Ans 2 24 82 -22 (24) (x2+y2+z2) (x2 + 42 + 55) $\frac{\partial^2 u}{\partial z \partial x} = \frac{\partial}{\partial z} \left[\frac{\partial}{\partial x} \left(\frac{\partial}{\partial x} \left(\frac{\partial^2 + y^2 + z^2}{\partial x^2} \right) \right) \right]$ = 2 2 2 2 2 + y2 + 22 $= -4x^2$ $\left(x^2 + y^2 + 2^2\right)$ LHS $3\lambda 95 \qquad (\alpha_5 + \lambda_5 + S_5)$ Rus = $\frac{959x}{1950} = -4x5$ LKS = RKS Hence Rusyod

Sty Bow



Topic

$$z du = -y du + z du$$

 $dz z ds x dt$

LHS

$$= \frac{x \, du - \frac{1}{2} / du - \frac{1}{2} / du - \frac{1}{2} / du}{\frac{1}{2} / du} = \frac{1}{2} / \frac{1}{2} x$$

$$+ \frac{1}{2} / \frac{1}{2} / \frac{1}{2} x$$

$$+ \frac{1}{2} / \frac{1}{2} / \frac{1}{2} x$$

_ Date_

- 0

Ans

Hence Revoved

du = du doc + dy dy doc dx dy

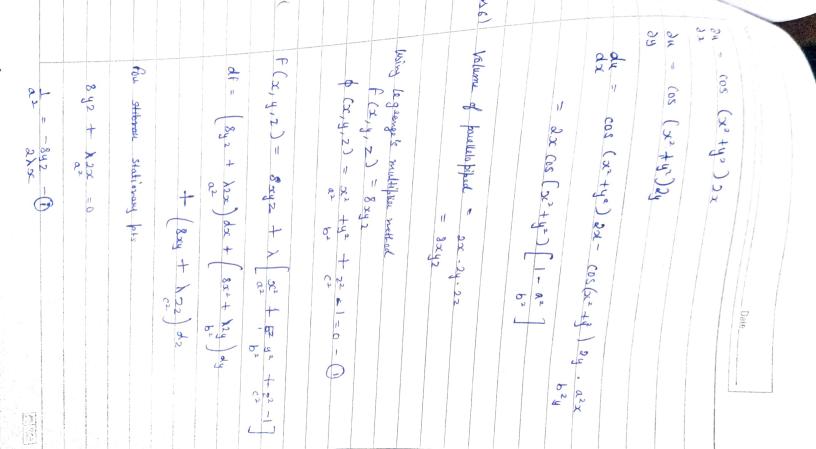
$$dx = \partial x + \partial y \cdot \partial y$$

$$dx = \partial x + \partial y \cdot \partial x$$

 $a^2 \propto^2 + b^2 y^2 = c^2$ diff both side

$$a^2(2x) + b^2(2y) dy = 0$$

$$dy = -89a^{2}(200)$$



$$8x2 + \lambda 2y = 0$$

$$8xy + \lambda 2z = 0$$

$$1 = -8xy - (ii)$$

$$b^{2} = 2\lambda y$$

$$2\lambda z$$

Putting values in 1

$$-8xy2 + \left(-8xy2\right) + \left(-8xy2\right) = 1$$

$$2\lambda$$

$$-12 xyz = \lambda$$

$$2xyz = -\lambda$$

$$12$$

$$\frac{1}{a^2} = -847$$

$$-24x^2y^2$$

$$x = a$$
 $\sqrt{3}$

similarly

acu, v, w) 2(x,y,z) 34° -3x2 3522 -3x1 2x-y-2 2y-2c-2 22-4-0 $[(3y^2-3z)(2z-y-x)-(3z^2-3xy)(2y-x-z)]$ $- (3x^2 - 3yz)(2y - xc - z) + (3z^2 - 3xy)(2x - y - z)$ $+\left[\left(3x^{2}-3y^{2}\right)\left(2y-x-z\right)-\left(3y^{2}-3x^{2}\right)\left(2x-y-z\right)\right]$ Hence the relation uxists V= 3 x3 + y3 + 23 - 3 xyz (xty+2)[262 + y2 + 22- (284 + 42 + 220)] = n[x2+y2+z2-xy-y2-xz . " . V = UW functions are sunctionally dependent by the valation

Topic f(xy) = sin(x) + sin(y) + sin(x+y) Ass) b = cos x + cos (xty) q = cosy + cos(x+y) ot = - sinx - sin (x +y) + = - siny - sin(x+y) Sou stationary points When b=0 when b=0 cosy + cos(x+y)=0 cosx + cos(xxty) =0 (08 y = - (05 (xty) cos x = - cos (xc+y) cos x = cosy - cosx = - cosy x = 4 (05 2x = cos (x+4) = - (05x 2x= T-x SC = T y = x = T =) autical point is (3,) now out-s2 = f-sin(z) + sin(27)]. [sin(z) + sin(23]3 - - 5 m 24 J 124 (3.25)

