Exercise 14.5
Assignment 22 Date
Q 2
2 19x 3-x2-42
2 19-x² 3-x²-y²
The state of the s
$\int_{0}^{3} \sqrt{y^{2}} \frac{3-x^{2}-y^{2}}{5+x^{2}+y^{2}} dy dx$
$\int_{0}^{\sqrt{3}} \frac{1}{x} (3-x^{2}-y^{2}) - x(-5+x^{2}+y^{2}) dy dx$
2 14-x2
$= \int_{0}^{1} \int_{0}^{3x} - x^{3} - xy^{2} + 5x - x^{3} - xy^{2} dy dx$
$= \int_{0}^{2} 3xy \left  \sqrt{4-x^{2}} - x^{3}y \right _{0}^{4-x^{2}} - xy^{3} \left  \sqrt{4-x^{2}} - xy \right _{0}^{4-x^{2}} + 5xy \left  \sqrt{4-x^{2}} - xy \right _{0}^{4-x^{2}}$
- xy3 1 19-x2
$= \int_{0}^{2} 3x [4-x^{2}-x^{3}\sqrt{4-x^{3}}-x(4-x^{2})^{3}+5x\sqrt{4-x^{2}}$ $-x^{3}\sqrt{4-x^{2}}-x(4-x^{2})^{3}$
$(-x^{2} - \pm (14-x^{2})^{2} + \pm 5x\sqrt{4-x^{2}}$
- X (14-X=)
$= \int_{0}^{3} 8x \sqrt{4-x^{2}} - 2x^{3} \sqrt{4-x^{2}} - \frac{2x}{3} \sqrt{4-x^{2}} $
3 = W4-x-) dx

: X = J4-t2

$$\frac{2}{-4}\int_{0}^{2} -2x\sqrt{4-x^{2}dx} - \int_{0}^{2} 2x^{3}\sqrt{4-x^{2}dx} - \int_{0}^{2} \frac{2x(\sqrt{4-x^{2}})^{3}}{3}dx$$

Appy substitution for middle part

$$dx = \frac{t}{\sqrt{4-t^2}}$$

$$-\int_{0}^{2} 2(4-t^{2})^{3/2} \frac{t^{2}}{(4-b^{2})^{3/2}}$$

$$= \frac{st^3}{3} - \frac{st^5}{5} \Big|_{0}^{2}$$

$$= 8(\sqrt{4-x^2})^3 - 2(\sqrt{4-x^2})^5 / 2$$

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$$= 3(4-x^{2})^{\frac{3}{2}} - (8154-x^{2})^{3} - 2(54-x^{2})^{5})$$

$$-\frac{1}{3}\frac{(4-x^2)^{5/2}}{5/2}\frac{dx}{3}$$

$$\frac{-4 \left(80 - 44\right)^{3/2}}{3/2} - \left[0 - \left(\frac{8(4)^{3/2}}{3} - \frac{2(40^2)^{5/2}}{5}\right)\right]$$

$$- \left[ 0 - \frac{1}{3} \frac{(4)^{5/2}}{5/2} \right]$$

$$= \frac{64/3}{3} + \frac{64}{3} = \frac{64}{5} + \frac{64}{15}$$

## QII

SSS x.yz dv

I limit

Z=0 Z=x2

Y- Limit.

18=0

J=X

X - limit

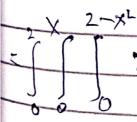
|X = 0

" y=x & y=0

Z = 2=x2

0=2-X2

X = 2



xyz dzdy da

 $\int_{2}^{2} \int_{2}^{x} \frac{xy^{2}}{2} \int_{0}^{2-x^{2}} dy dx$ 

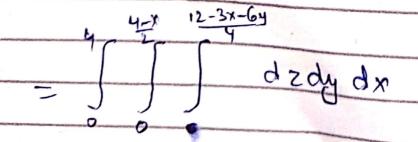
214 (2-x3) dy dz D  $^{3}(2-x^{2})^{2}dx$ U = 2-X Letdu 20 = -2x dx dx = - 4 du dx z 30> 7 dy DC, No.

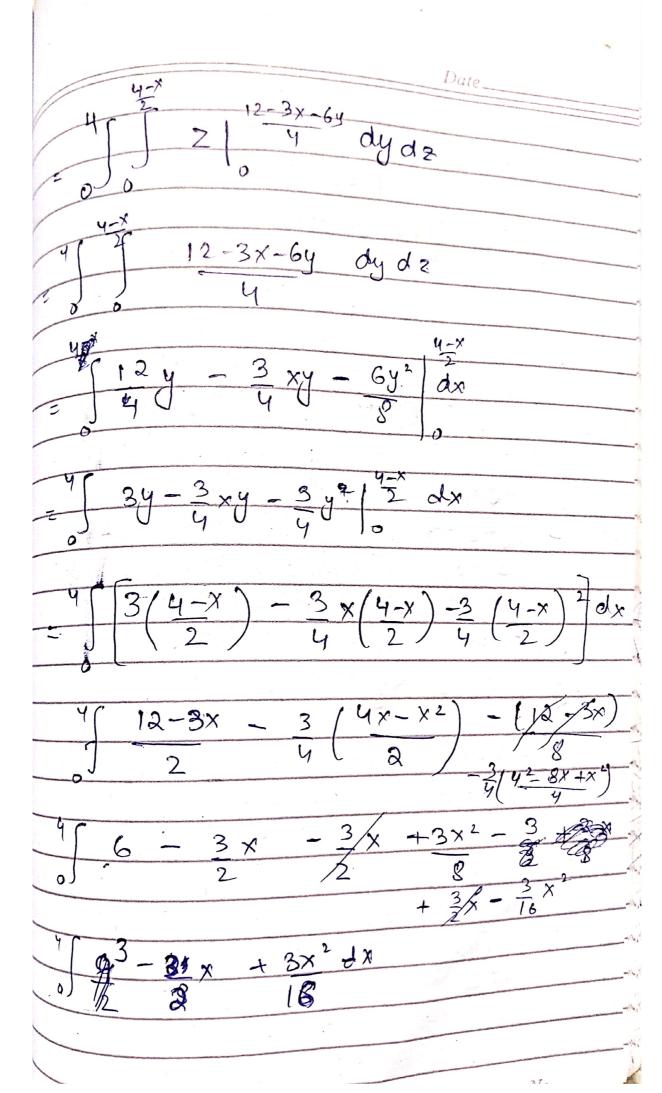
Date\_ US U (2/-x2)3 Ó  $\frac{2^3}{3}$ 8

$$\frac{2:6}{2:12-3x-6y}$$

$$\frac{y=0}{y=12-3x} = \frac{y}{2} \quad \frac{yz}{2} \quad \frac{y-x}{2}$$

## x-Umil

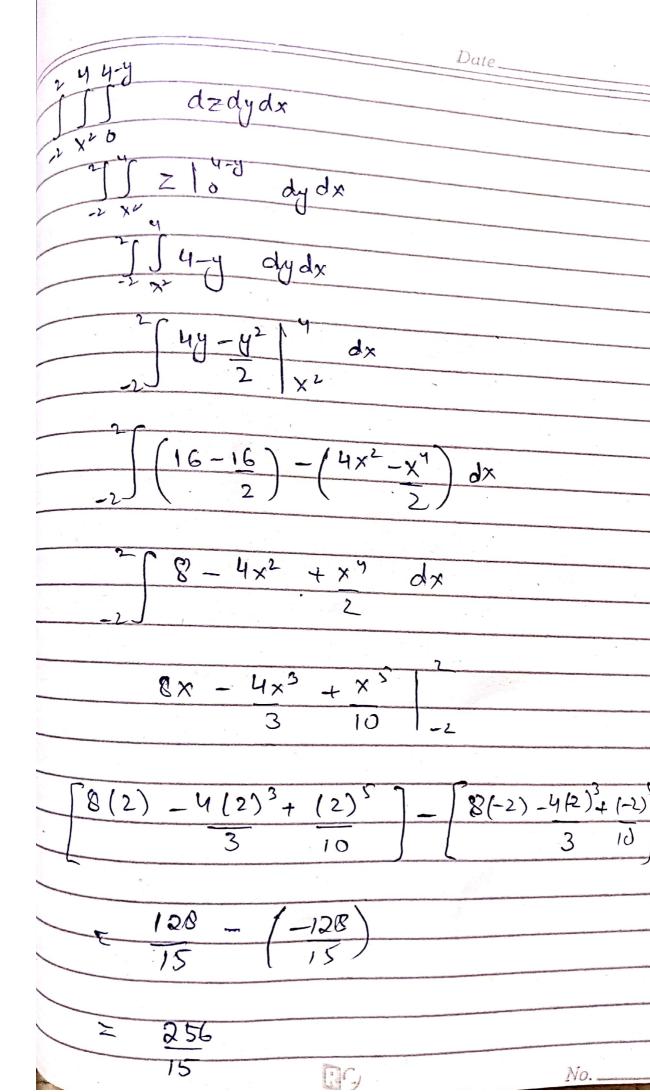




Date

$$\frac{3 \times 2^{3} \times 2^{2} + 3 \times 3}{4} = \frac{3 \times 2^{3} \times 2}{(6 \times 3)^{3}} = \frac{3 \times 2^{3} \times 2^{2} + 3 \times 3}{4} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{(6 \times 3)^{3}} = \frac{3 \times 2^{3} \times 2^{3} \times 2^{3} \times 3}{4} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{4} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{4} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 2^{3} \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 3} = \frac{3 \times 2^{3} \times 2^{3} \times 3}{16 \times 2^{3} \times 2^{3}$$

## Q17



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