Math 201-16 Quize #Make Up B Sem 041

Name: Key I.D.# Serial #

Q1: Evaluate the integral by converting to polar coordinates

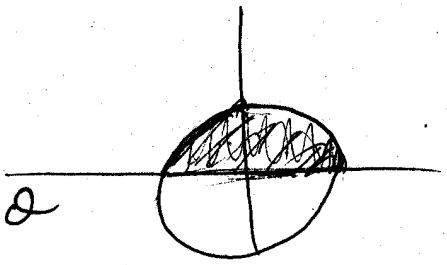
$\int_0^2 \int_{-\sqrt{4-y^2}}^{\sqrt{4-y^2}} 2\cos(x^2+y^2)\, dx\, dy$ $x = -\sqrt{4-y^2}$ to $x = \sqrt{4-y^2}$

$y = 0$ to $y = 2$

$= \int_0^{\pi} \int_0^2 2\cos r^2 \cdot r\, dr\, d\theta$

$= \int_0^{\pi} \left[\sin r^2\right]_0^2 d\theta = \int_0^{\pi} (\sin 4 - \sin 0)\, d\theta$

$= \pi \sin 4$

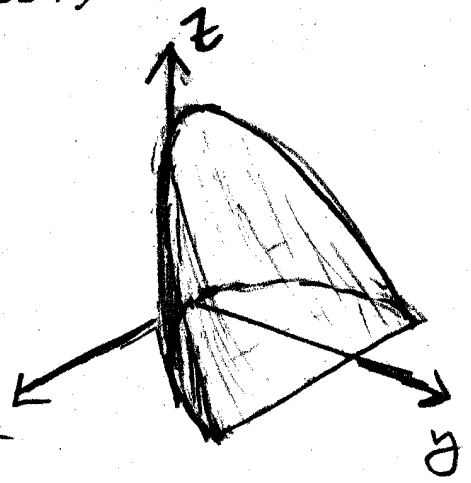


Q2: Set up the triple integral (do not evaluate) to find the volume of the solid region bounded by $y = x^2$ and the planes $z = 0$, and $z + y = 4$

$V = \iiint_Q dV = \int_{-2}^{2} \int_{x^2}^{4} \int_0^{4-y} dz\, dy\, dx$

OR

$V = \int_0^4 \int_{-\sqrt{y}}^{\sqrt{y}} \int_0^{4-y} dz\, dx\, dy$



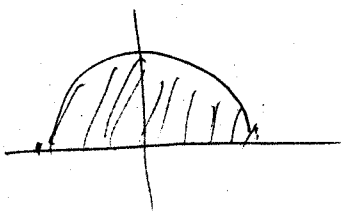
Math 201-16 Quize #Make UpA Sem 041

Name: Key I.D.# _____ Serial # _____

Q1: Evaluate the integral by converting to polar coordinates

$\int_{-3}^{3}\int_{0}^{\sqrt{9-x^2}} \cos(x^2+y^2)\, dy\, dx$ $y=0$ to $y=\sqrt{9-x^2}$

$x=-3$ to $x=3$

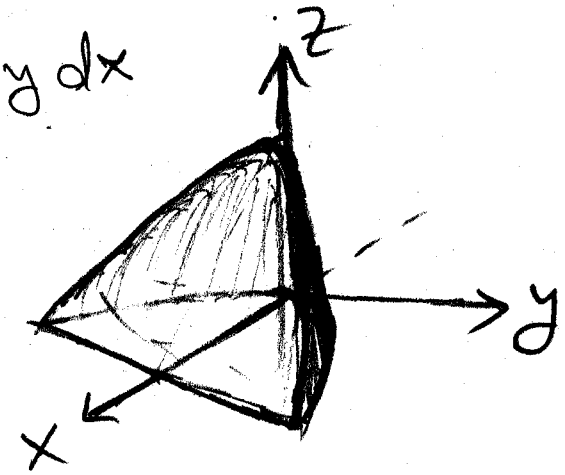


$$= \int_0^{\pi}\int_0^{3} \cos r^2 \cdot r\, dr\, d\theta = \frac{1}{2}\int_0^{\pi} \left[\sin r^2\right]_0^3 d\theta$$

$$= \frac{1}{2}\sin 9 \cdot (\pi - 0) = \frac{\pi}{2}\sin 9$$

Q2: Set up the triple integral (do not evaluate) to find the volume of the solid region bounded by $x = y^2$ and the planes $z = 0$, and $z + x = 1$

$$V = \iiint_Q dV = \int_0^1 \int_{-\sqrt{x}}^{\sqrt{x}} \int_0^{1-x} dz\, dy\, dx$$



OR

$$= \int_{-1}^{1} \int_{y^2}^{1} \int_0^{1-x} dz\, dx\, dy$$

Math 201-13 Quize #Make Up A Sem 041

Name: Key I.D.# _____ Serial # _____

Q1: Evaluate the integral by converting to polar coordinates

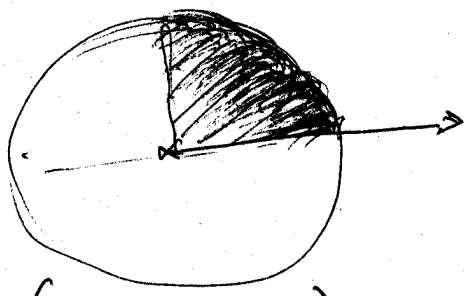
$\int_0^2 \int_0^{\sqrt{4-x^2}} \sin(x^2+y^2)\, dy\, dx$

$y=0$ to $y=\sqrt{4-x^2}$

$x=0$ to $x=2$

$x^2+y^2=4 \Rightarrow r=2$

$= \frac{1}{2}\int_0^{\pi/2}\int_0^2 \sin r^2 \cdot 2r\, dr\, d\theta$

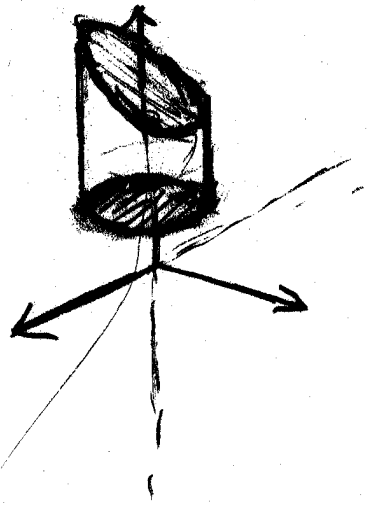


$= \frac{1}{2}\int_0^{\pi/2} -\cos r^2 \Big]_0^2 d\theta =$

$= \frac{-1}{2}(\cos 4 - \cos 0)\cdot \frac{\pi}{2} = \frac{\pi}{4}(1-\cos 4)$

Q2: Set up the triple integral (do not evaluate) to find the volume of the solid region within the cylinder $x^2+y^2=1$ and between the planes $z=2$, and $z-x=4$

$V = \iiint_Q dV = \int_{-1}^{1}\int_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}}\int_{x+4}^{2} dz\, dy\, dx$



Math 201-13 Quize #Make Up 8 Sem 041

Name: Key I.D.# Serial #

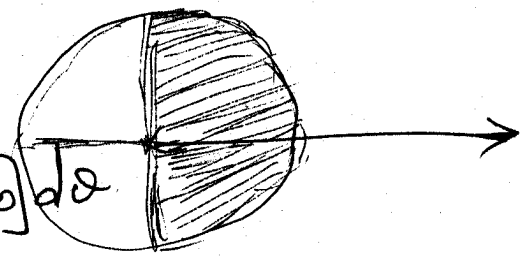
Q1: Evaluate the integral by converting to polar coordinates

$$\int_{-2}^{2}\int_{0}^{\sqrt{4-y^2}} 2\sin(x^2+y^2)\,dx\,dy$$

$x=0$ to $x=\sqrt{4-y^2}$

$y=-2$ to $y=2$

$x^2+y^2=4 \Rightarrow r=2$



$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}}\int_{0}^{2} 2\sin r^2 \cdot r\,dr\,d\theta$$

$$=\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} -\cos r^2\Big]_0^2\,d\theta = -\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} [\cos 4-\cos 0]\,d\theta$$

$$=[1-\cos 4](\pi)$$

Q2: Set up the triple integral (do not evaluate) to find the volume of the solid region within the cylinder $x^2+y^2=4$ and between the planes $z=1$, and $z+x=5$

$$V=\iiint_Q dV = \int_{-2}^{2}\int_{-\sqrt{4-x^2}}^{\sqrt{4-x^2}}\int_{1}^{5-x} dz\,dy\,dx$$