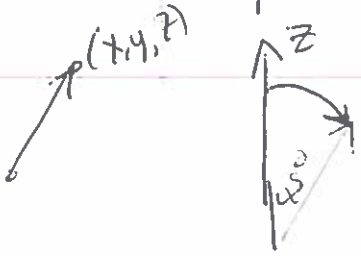
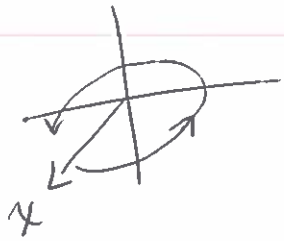
Spherical Coordinates

ρ = rho ϕ = phi θ = theta





$$\rho = \sqrt{x^2+y^2+z^2}$$

$0 \le \theta \le 2\pi$
$360°$

$X = 2$
$Y = 4$
$Z = 2$

$\rho = \sqrt{4+16+4}$
$= \sqrt{24} = 4.89..$

$\cos\phi = \frac{2}{4.89..}$

$\phi = 65.91°$

$X = \rho \cos\theta \sin\phi$
$Y = \rho \sin\theta \sin\phi$
$Z = \rho \cos\phi$

$\rho = 5$
$\theta = 70°$
$\phi = 50°$

$X = 5 \cos 70° \sin 50° = 1.31$
$Y = 5 \sin 70° \sin 50° = 3.58$
$Z = 5 \cos 50° = 3.21$

$$\frac{y}{x} = \frac{4}{2} = \frac{\rho \sin\theta}{\rho \cos\theta} = \tan\theta$$

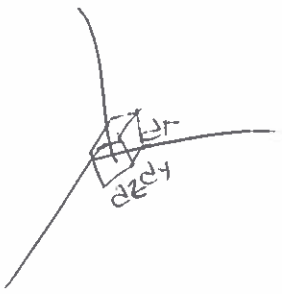
$$\tan\theta = \frac{y}{x} \qquad \theta = \tan^{-1}(2) = 63.43^\circ$$

$$\int f(x)\,dx$$

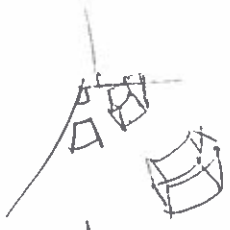
Height width

$$\iiint_Q f(x,y,z)\,dV$$

$$\iiint_{R\theta\phi} f(\rho\cos\theta\sin\phi, \rho\sin\theta\sin\phi, \rho\cos\phi)\,\rho^2\sin\phi\,d\rho\,d\phi\,d\theta$$



rect

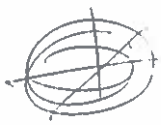


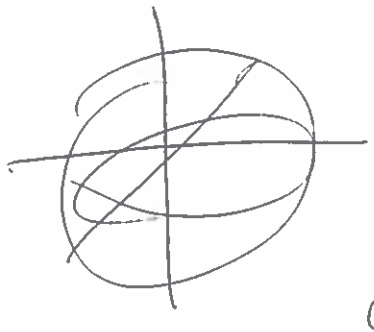
cyl.

$r\,dr\,d\theta\,dz$

$z\,dz\,dr\,dr$

$$\rho \int_0^r$$





$$\int_{\varphi=0}^{\pi}\int_{\theta=0}^{2\pi}\int_{\rho=0}^{\text{radius}} f(\_,\_,\_)\,\rho^2\sin\varphi\,d\rho\,d\theta\,d\varphi$$

$$\int_{\varphi=0}^{\pi/4}\int_{\theta=0}^{2\pi}\int_{\rho=0}^{\text{radius}}$$

GROUP NAME: 42	Student Names (First and Last)
Logo:	Speaker/Presenter: BP
Date: 11-7-13	Writer/Prep: Kayla
Topics:	QC/Leader: Gary G

Instructions:

$\approx$

≈ 201176817

$= \pi 651000$