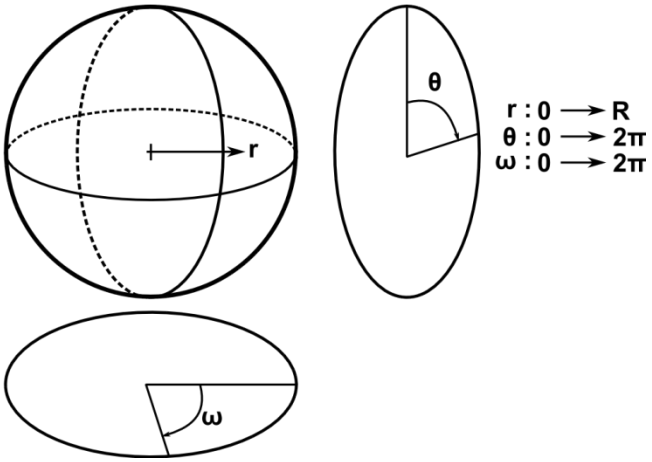
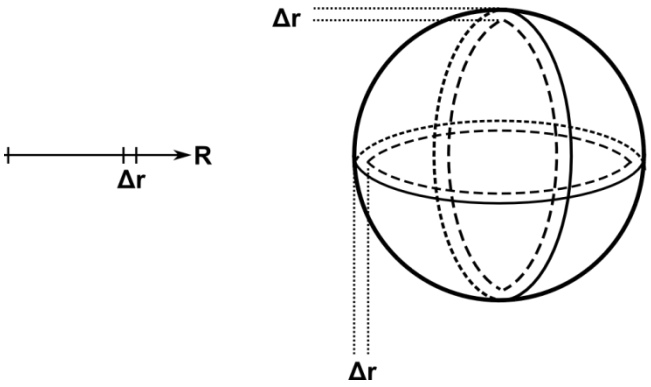
I. SPHERICAL COORDINATES (r, ω, θ)



$A_r = 4\Pi R^2$ $A_\omega = \Pi R^2$ $A_\theta = \Pi R^2$

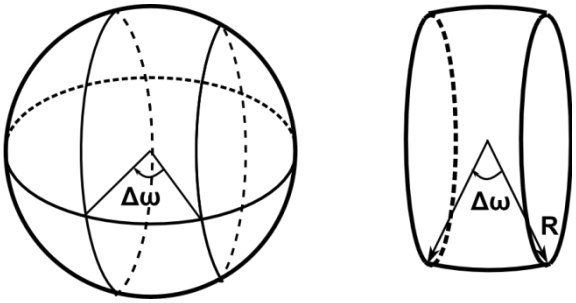
$V = \frac{4}{3}\Pi R^3$

I.A. DIFFERENTIAL VOLUME ELEMENT OF Δr (Δr, 2π, π)



$A_r = 4\Pi r^2$	$A_\omega = 2\Pi r \Delta r$	$A_\theta = 2\Pi r \Delta r$
$V = 4\Pi r^2 \Delta r$		

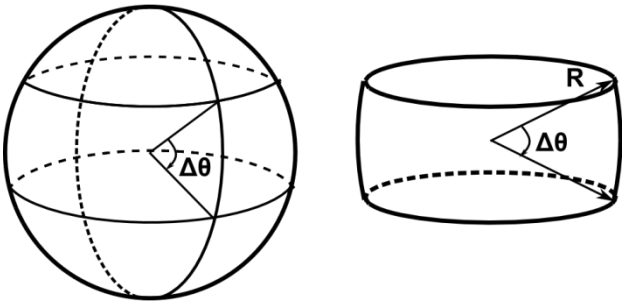
I.A. DIFFERENTIAL VOLUME ELEMENT OF Δω (R, Δω, 2π)



$A_r = 2R^2 \Delta\omega$ $A_\omega = \pi R^2$ $A_\theta = \frac{R^2}{2}\Delta\omega$

$V = \pi R^2 \Delta\omega$

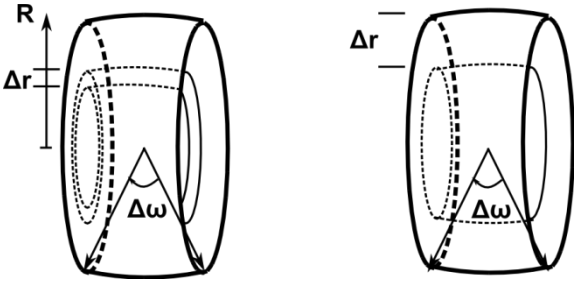
I.A. DIFFERENTIAL VOLUME ELEMENT OF Δθ (R, 2π, Δθ)



$A_r = 2\Pi R^2 \Delta\theta$ $A_\omega = \pi R^2 \Delta\theta$ $A_\theta = 2\Pi R^2$

$V = \pi R^2 \Delta\theta$

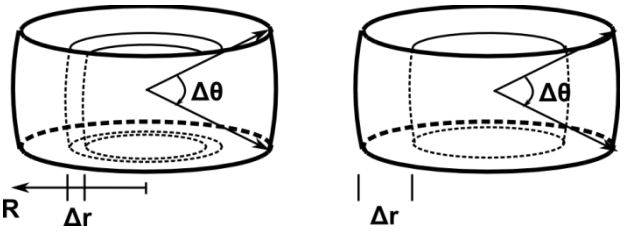
I.A. DIFFERENTIAL VOLUME ELEMENT OF Δr, Δω (Δr, Δω, 2π)



$A_r = 2\Pi r^2 \Delta\theta$ $A_\omega = 2\Pi r \Delta r$ $A_\theta = r\Delta r\Delta\omega$

$V = 2r^2 \Delta r\, \Delta\omega$

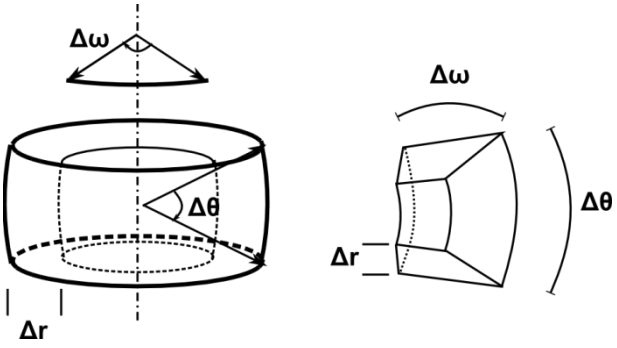
I.A. DIFFERENTIAL VOLUME ELEMENT OF Δr, Δθ (Δr, 2π, Δθ)



$A_r = 2\Pi r^2 \Delta\omega$ $A_\omega = r\Delta r\Delta\theta$ $A_\theta = 2\Pi r \Delta r$

$V = 2r^2 \Delta r \Delta\theta$

I.A. DIFFERENTIAL VOLUME ELEMENT OF Δr, Δω , Δθ (Δr, Δω , Δθ)



$A_r = r^2 sin\theta \Delta\theta\Delta\omega$ $A_\omega = r\Delta r\Delta\theta$ $A_\theta = r\Delta r\Delta\omega$

$V = r^2 \Delta r sin\theta \Delta\theta\Delta\omega$