

Table 14.6.1

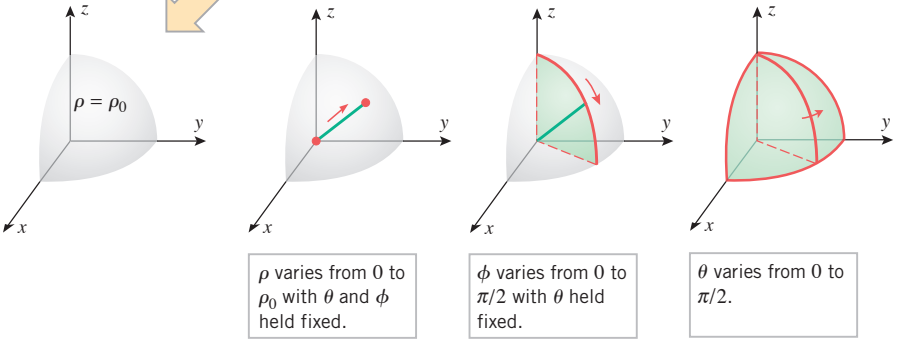
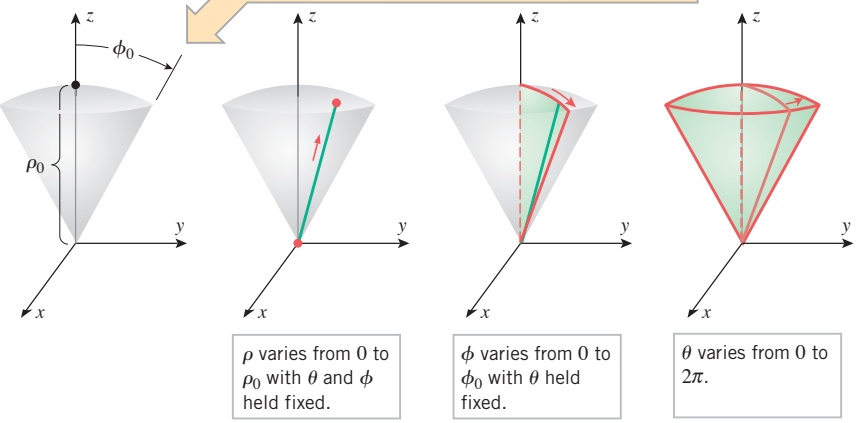
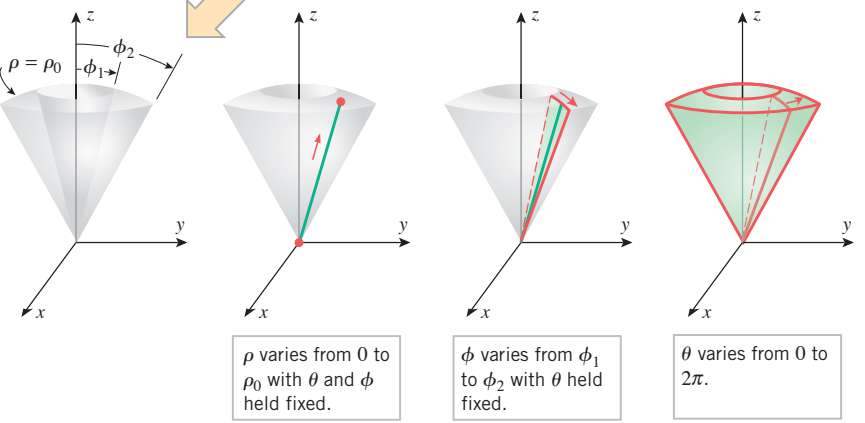
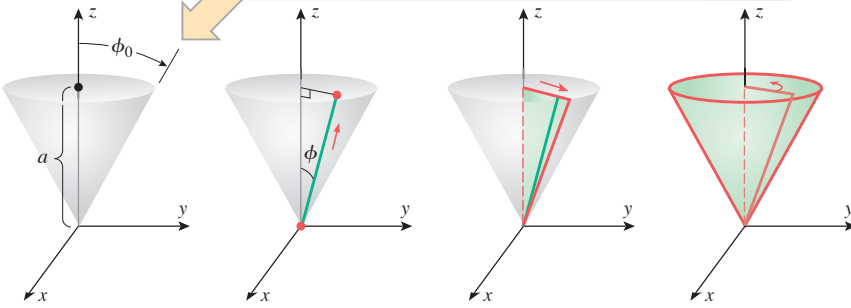
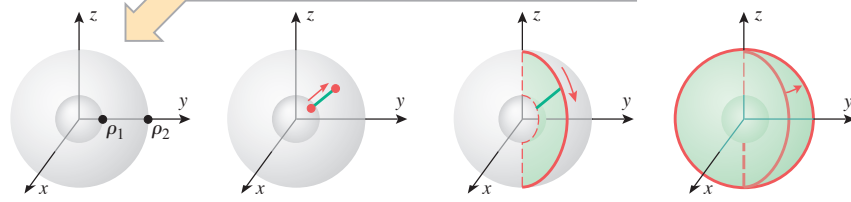
DETERMINATION OF LIMITS				INTEGRAL
This is the portion of the sphere of radius ρ_0 that lies in the first octant.  ρ varies from 0 to ρ_0 with θ and ϕ held fixed. ϕ varies from 0 to $\pi/2$ with θ held fixed. θ varies from 0 to $\pi/2$.				$\int_0^{\pi/2} \int_0^{\pi/2} \int_0^{\rho_0} f(\rho, \theta, \phi) \rho^2 \sin \phi \, d\rho \, d\phi \, d\theta$
This ice-cream-cone-shaped solid is cut from the sphere of radius ρ_0 by the cone $\phi = \phi_0$.  ρ varies from 0 to ρ_0 with θ and ϕ held fixed. ϕ varies from 0 to ϕ_0 with θ held fixed. θ varies from 0 to 2π.				$\int_0^{2\pi} \int_0^{\phi_0} \int_0^{\rho_0} f(\rho, \theta, \phi) \rho^2 \sin \phi \, d\rho \, d\phi \, d\theta$
This solid is cut from the sphere of radius ρ_0 by two cones, $\phi = \phi_1$ and $\phi = \phi_2$, where $\phi_1 < \phi_2$.  ρ varies from 0 to ρ_0 with θ and ϕ held fixed. ϕ varies from ϕ_1 to ϕ_2 with θ held fixed. θ varies from 0 to 2π.				$\int_0^{2\pi} \int_{\phi_1}^{\phi_2} \int_0^{\rho_0} f(\rho, \theta, \phi) \rho^2 \sin \phi \, d\rho \, d\phi \, d\theta$

Table 14.6.1 (continued)

DETERMINATION OF LIMITS				INTEGRAL
This solid is enclosed laterally by the cone $\phi = \phi_0$, where $0 < \phi_0 < \pi/2$, and on top by the horizontal plane $z = a$.  ρ varies from 0 to $a \sec \phi$ with θ and ϕ held fixed. ϕ varies from 0 to ϕ_0 with θ held fixed. θ varies from 0 to 2π.				$\int_0^{2\pi} \int_0^{\phi_0} \int_0^{a \sec \phi} f(\rho, \theta, \phi) \rho^2 \sin \phi \, d\rho \, d\phi \, d\theta$
This solid is enclosed between two concentric spheres, $\rho = \rho_1$ and $\rho = \rho_2$, where $\rho_1 < \rho_2$.  ρ varies from ρ_1 to ρ_2 with θ and ϕ held fixed. ϕ varies from 0 to π with θ held fixed. θ varies from 0 to 2π.				$\int_0^{2\pi} \int_0^{\pi} \int_{\rho_1}^{\rho_2} f(\rho, \theta, \phi) \rho^2 \sin \phi \, d\rho \, d\phi \, d\theta$