Derivation Of Volume Of A Cone

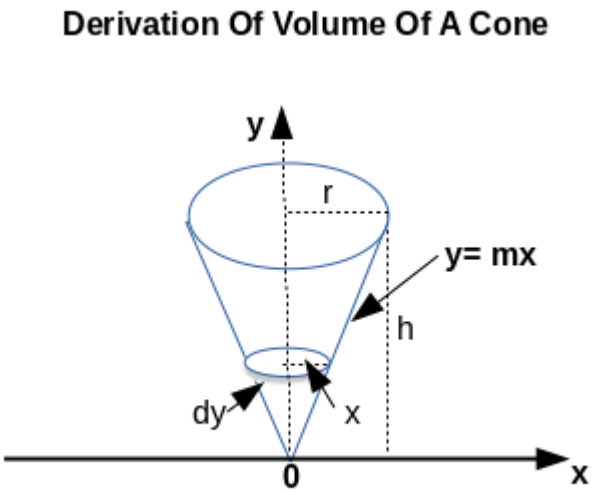

Figure 113.5

Consider the cone illustrated in figure 113.5.
Volume of cone = $\mathbf{(1/3)\pi r^2 h}$

Derivation of Volume Of A Cone

Area of smaller circle in cone = πx^2
Volume of smaller circle in cone = $\pi x^2 dy$

So, volume of cone = $\int_0^h \pi x^2 dy$----------**(1)**

$$= \int_0^h \pi (y/m)^2 dy$$

$$= \pi(1/m^2)\int_0^h y^2 dy$$

$$= (1/3)\pi(1/m^2)h^3$$

$$= \mathbf{(1/3)\pi r^2 h} \qquad \text{since } m = h/r$$

The string is $S_1P_1A_{14}$ - Empty Space – Containership - Volume

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