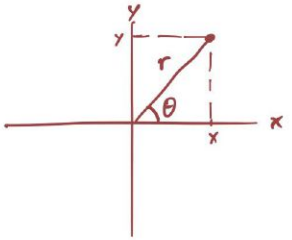
Lec 18 Cylindrical & Cylindrical coord

Recall polar coord



$r = \sqrt{x^2+y^2}$ $\quad x = r\cos\theta$

$\tan\theta = \frac{y}{x}$ $\quad y = r\sin\theta$

↑ multiple sol. choose according to signs of x and y.

$r = 3\sin\theta$ ... $y = r\sin\theta$

$\Rightarrow \frac{r}{y} = \frac{3}{r} \Rightarrow r^2 = 3y$

... $\Rightarrow$ equation in x, y

Cylindrical Coord

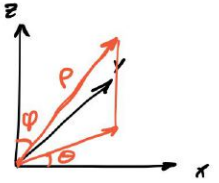
* $(x, y, z) \rightarrow (r, \theta, z)$ i.e. the $z=0$ plane is polar.

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

$r^2 + z^2 = 9 \Rightarrow x^2 + y^2 + z^2 = 0$

Spherical Coord

(ρ, θ, φ)



$\tan\theta = \frac{y}{x}$

$\cos\varphi = \frac{z}{\rho}$

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