Persamaan Parametrik

- Lingkaran → $x = a\cos\theta$ & $y = a\sin\theta$; $0 \le \theta \le 2\pi$

Garis Singgung Scr. Parametrik

$$\frac{dy}{dx} = \frac{dy}{dt}\frac{dt}{dx} = \frac{dy/dt}{dx/dt} = \frac{y'(t)}{x'(t)}$$

Panjang Busur Parametrik

$$S = \int_{t_1}^{t_2} \sqrt{\left(\frac{dx}{dt}\right)^2 + \left(\frac{dy}{dt}\right)^2}\, dt$$

Koordinat Kutub (r, θ):

Hubungan koordinat kutub dengan siku "(Kartesian)

$x = r\cos\theta$ $\quad$ $y = r\sin\theta$

$r^2 = x^2 + y^2$ $\quad$ $\tan\theta \frac{y}{x}$

Grafik Dalam Koordinat Kutub

$r\cos\theta = a$ $\quad$ $r\sin\theta = b$

*Lingkaran Dalam Koordinat Kutub

$r = a \longrightarrow P(a, \theta)$

Jika Lingkaran berpusat Sb-x

$r = 2a\cos\theta$ atau $r = -2a\cos\theta$

Jika Lingkaran berpusat di Sb-y

$r = 2a\sin\theta$ atau $r = -2a\sin\theta$

* Kardioda & Limacon

$r = a + b\cos\theta$ ---(1)

$r = a - b\cos\theta$ ---(2)

$r = a + b\sin\theta$ ----(3)

$r = a + b\sin\theta$ --(4)

Limaçons

$\frac{a}{b} < 1$ $\frac{a}{b} = 1$ $\frac{1 < a}{b < 2}$ $\frac{a}{b} \geq 2$

(Kardioda) (Limakon cekung) (Limakon cembung)

* Lemniscate

$r^2 = a^2\cos 2\theta$

$r^2 = -a^2\cos 2\theta$

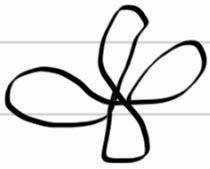
$r^2 = a^2\sin 2\theta$

$r^2 = -a^2\sin 2\theta$

* Spiral

$r = a\theta \quad (\theta \geq 0)$
$r = a\theta \quad (\theta \leq 0)$

* Kurva Rose



$r = a \sin n\theta$ Jika n ganjil, maka daun $= n$
$r = a \cos n\theta$ Jika n genap, maka duun $= 2n$

*Luas Dalam Koordinat Kutub

$$A = \int_{\theta_1}^{\theta_2} \frac{1}{2} r^2 \, d\theta$$

$$V = \int_{\theta_1}^{\theta_2} \frac{2}{3} \pi r^3 \sin\theta \, d\theta \quad \text{(diputar thdp sb-x)}$$

$$V = \int_{\theta_1}^{\theta_2} \frac{2}{3} \pi r^3 \cos\theta \, d\theta \quad \text{(diputar thdp sb y)}$$

* Garis Singgung Koordinat Kutub

$$\frac{dy}{dx} = \frac{dy/d\theta}{dx/d\theta} = \frac{r\cos\theta + \sin\theta \, dr/d\theta}{-r\sin\theta + \cos\theta \, dr/d\theta}$$

* Panjang Busur Kurva Kutub

$$S = \int_{\theta_1}^{\theta_2} \sqrt{r^2 + \left(\frac{dr}{d\theta}\right)^2} \, d\theta$$