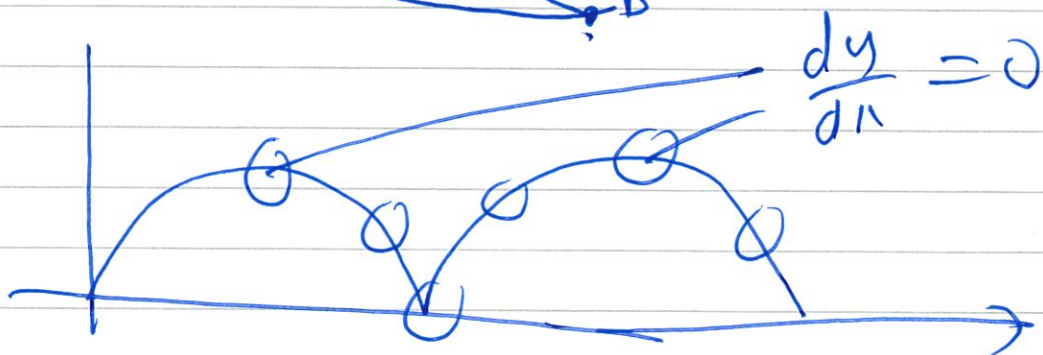
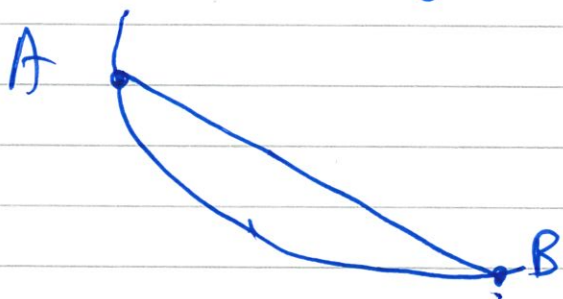


$x, y$  are written in terms of a third variable,  
 $\theta, t, T, \dots$

---

$$x = t - \sin(t), \quad y = 1 - \cos(t)$$



$$x = t - \sin(t),$$

$$y = 1 - \cos(t)$$

$$\left(\frac{dy}{dx}\right)?$$

$$\frac{dx}{dt} = 1 - \cos(t)$$

$$\frac{dy}{dt} = \sin(t)$$

$$\boxed{\frac{dy}{dx} = \frac{dy/dt}{dx/dt} = \frac{\sin(t)}{1 - \cos(t)}}$$

$$\sin(t) = 0$$

$$t = 0, 2\pi, 4\pi, \pi,$$

$$\frac{dy}{dx}$$