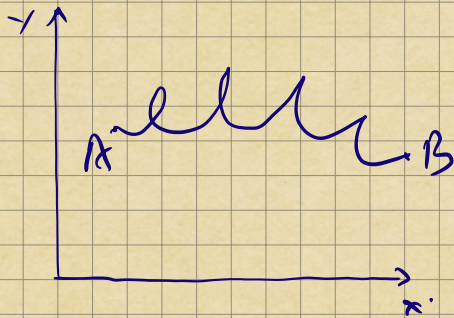
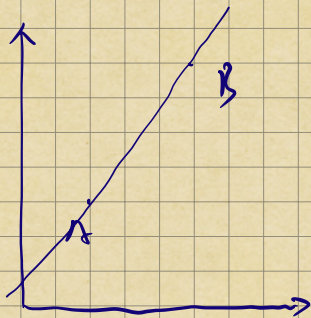


## Parametric Curves.



eg. write parametric equation of line AB  
passing through A  $(x_A, y_A)$  B  $(x_B, y_B)$ .



pick an arbitrary point  $M(x_M, y_M) \in L$

$$\vec{AM} \parallel \vec{AB}. \quad \vec{AM} = t \vec{AB}.$$

$$\vec{AM} = (x_M - x_A, y_M - y_A)$$

$$(x_M - x_A, y_M - y_A) = t (x_B - x_A, y_B - y_A).$$

$$x_M = t x_B + (1-t) x_A. \quad t \in \mathbb{R}.$$

$$y_M = t y_B + (1-t) y_A.$$

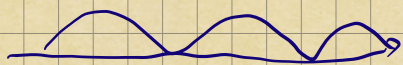
$$\begin{aligned} x &= x_A + t(x_B - x_A) \\ y &= y_A + t(y_B - y_A) \end{aligned} \quad t \in [0, 1]:$$

eg.  $x^2 + y^2 = a^2.$

$$\begin{aligned} x &= a \cos \theta \\ y &= a \sin \theta \end{aligned} \quad t \in [0, 2\pi).$$

eg. if a circle of radius  $a$  is rolling without slipping along a straight line. describe the line.





$$x = t + \sin t$$

$$y = 1 - \cos t$$