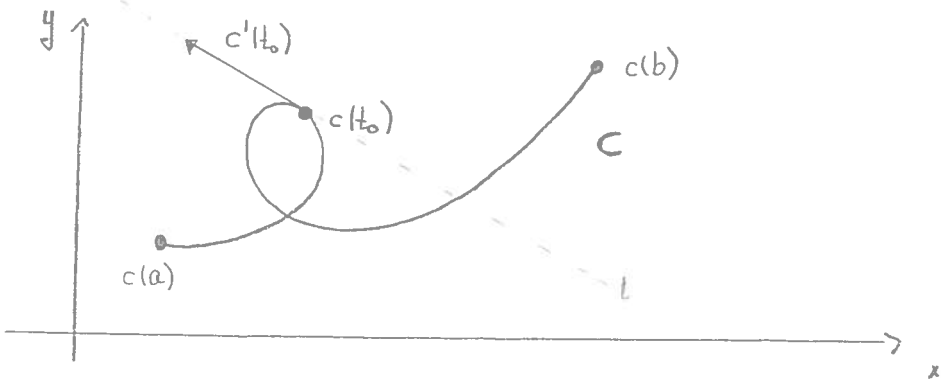
REPETITION 29/1

PATH AND CURVES



$c : [a,b] \to \mathbb{R}^2$ parametrizes the curve C

- $c'(t_0)$: velocity vector at time t_0 = tangent vector at $c(t_0)$
- $\| c'(t_0) \|$: speed at time t_0
- $l(t) = c(t_0) + c'(t_0)(t - t_0)$ tangent line at $c(t_0)$

PROPETIES OF THE DERIVATIVE

→ exactly the same as in one-variable calculus, e.g

$$D(f+g) = Df + Dg \quad \text{(sum)}$$

$$D(fg) = gDf + fDg \quad \text{(product rule)}$$

$$D\left(\frac{f}{g}\right) = \frac{gDf - fDg}{g^2} \quad \text{(quotient rule)}$$

Exercise

Calculate $\dfrac{\partial^3 f}{\partial x \partial z \partial x}$ where $f(x,y,z) = x^2 y e^{xz}$