

テーマ：
媒介変数と導関数



。媒介変数、導関数

$$\begin{cases} x = f(t) \\ y = g(t) \end{cases} \Rightarrow \frac{dy}{dx} \text{ 求む。}$$

$$\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}}$$

— y を t で微分

— x を t で微分

$$= \frac{g'(t)}{f'(t)}$$



(ex)

$$x = 2t, \quad y = t^2 - 1$$

$$\frac{dy}{dx} = \frac{\frac{dy}{dt}}{\frac{dx}{dt}} = \frac{2t}{2} = t$$

$$\underline{\underline{\frac{dy}{dx} = t}}$$



$$x = 2t \quad \text{or} \quad t = \frac{1}{2}x$$

$$y = \left(\frac{1}{2}x\right)^2 - 1$$

$$y = \frac{1}{4}x^2 - 1$$

$$\frac{dy}{dx} = \frac{1}{2}x = t$$

or

$$\underline{\underline{\frac{dy}{dx} = t}}$$