$$\partial_t \arctan x = \underbrace{\partial_x \arctan x}_{= \frac{1}{1+x^2}} \cdot \dot{x}$$

$$(1+\theta^2)(\partial_t \arctan \theta) = \dot{\theta}$$

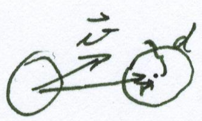
$$\dot{\theta}_i = (1+\theta_i^2) \cdot \frac{\arctan \theta_{i+1} - \arctan \theta_{i-1}}{\Delta t}$$

$$\partial_t \cos\theta = -\sin\theta \cdot \dot{\theta}$$

$$\dot{\theta}_i = \frac{-1}{\sin\theta_i} \cdot \frac{\cos\theta_{i+1} - \cos\theta_{i-1}}{\Delta t}$$

$$\partial_t \sin\theta = \cos\theta \cdot \dot{\theta}$$

$$\dot{\theta}_i = \frac{1}{\cos\theta_i} \cdot \frac{\cancel{\cos\theta_{i+1}}\, \sin\theta_{i+1} - \sin\theta_{i-1}}{\Delta t}$$



$$d = \left\| \vec{r} - \frac{\langle \vec{r}, \vec{v} \rangle}{\|\vec{v}\|^2} \vec{v} \right\|$$

$$\frac{1,6}{0,2} = 8$$

$$\frac{7,5}{2,5} = 3$$

$$\frac{\alpha}{x_1^2} = I$$

$$\frac{\alpha}{x_2^2} = I_2$$

$$\vdots$$

$$\alpha \begin{pmatrix} \frac{1}{x_1^2} \\ \frac{1}{x_2^2} \\ \vdots \\ \frac{1}{x_n^2} \end{pmatrix} = \begin{pmatrix} I_1 \\ \vdots \\ I_n \end{pmatrix}$$

$$\alpha \approx 10,1228$$