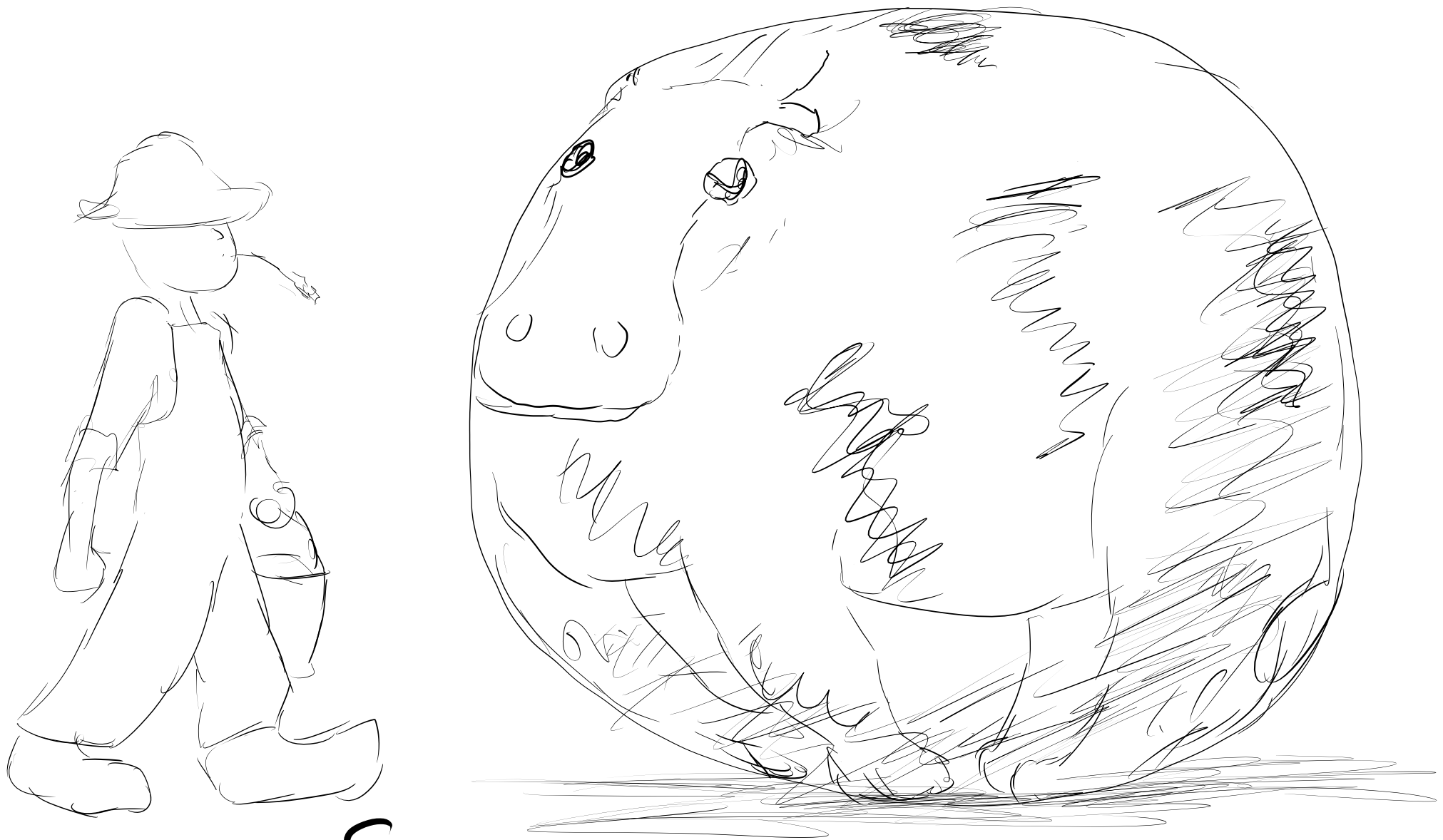


Assume a

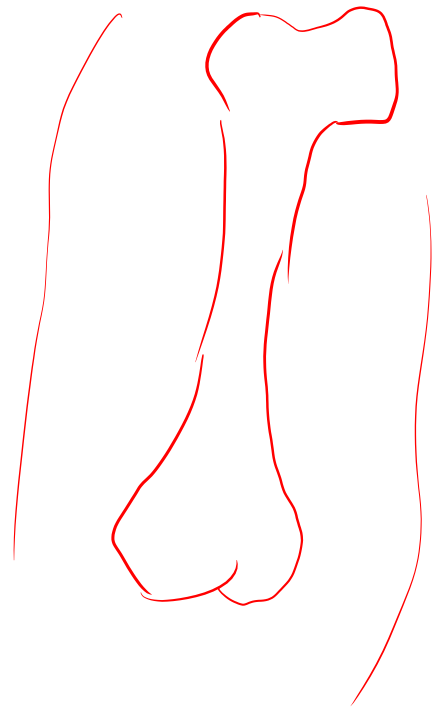


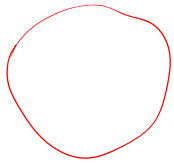
Spherical Cow

Mass - spring system

Rigid-body dynamics

Soft-body dynamics





State:

position —

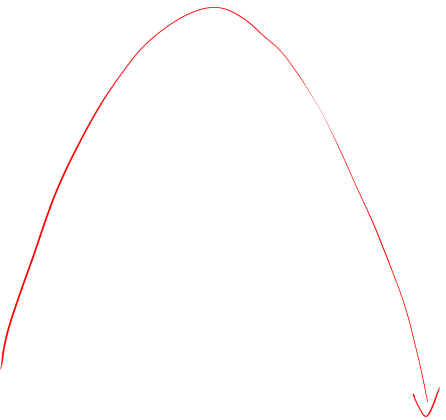
radius

velocity ✓

mass

$$\vec{P}_1 = \vec{P}_0 + \Delta t \vec{V}_0 + \frac{1}{2} \Delta t^2 \vec{g}$$

$$\vec{V}_1 = \vec{V}_0 + \Delta t \vec{g}$$



$$9.8 \frac{m}{s^2}$$

$$\frac{\frac{m}{s}}{s}$$

Momentum = $m \cdot \vec{v}$

fix: \vec{f}



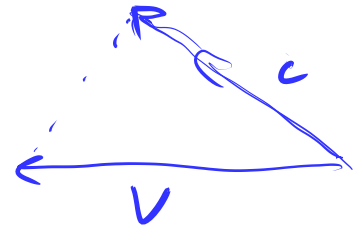
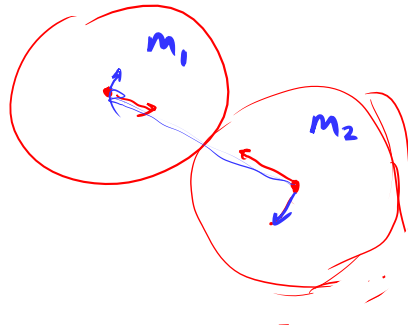
$$c' = \frac{c}{\|c\|}$$

along: $(v \cdot c')c'$

perp: $v - (v \cdot c')c'$

$$v_1 = \frac{m_2}{m_1 + m_2} \vec{f}$$

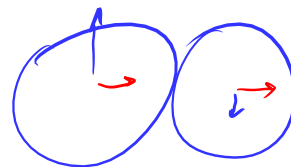
$$v_2 = \frac{m_1}{m_1 + m_2} \vec{f}$$



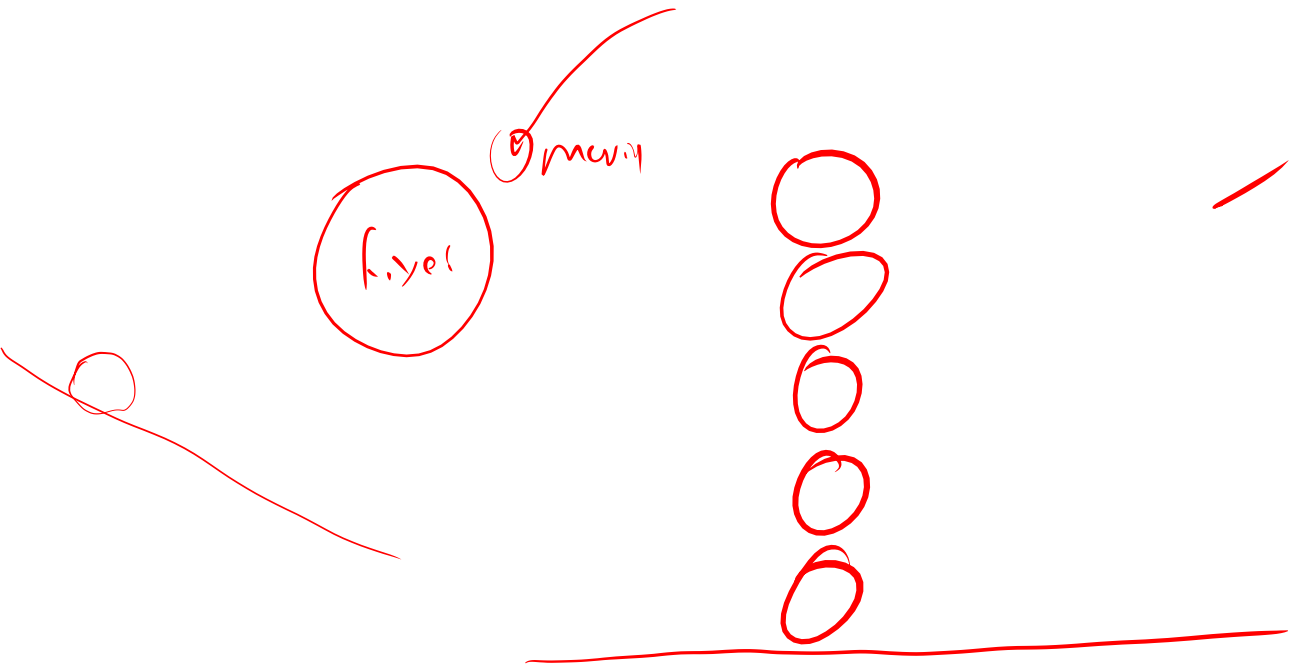
fully elastic

$$m_1 \|\vec{v}_{P_1}\|^2 + m_2 \|\vec{v}_{P_2}\|^2 = m_1 \|\vec{v}'_{P_1}\|^2 + m_2 \|\vec{v}'_{P_2}\|^2$$

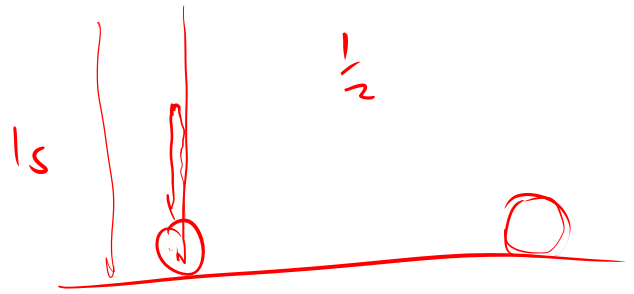
fully inelastic



SRIC



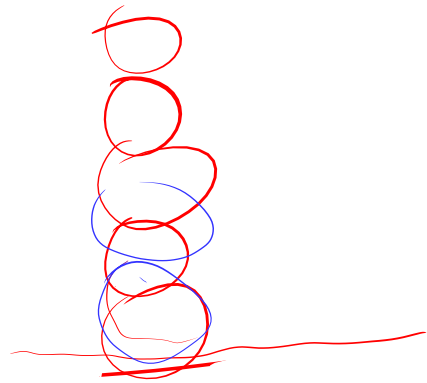
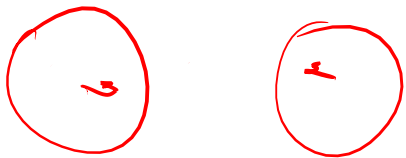
- Collision decision
1. solve for exact time
 2. test overlap + fix



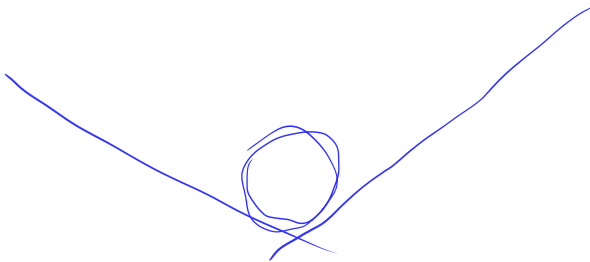
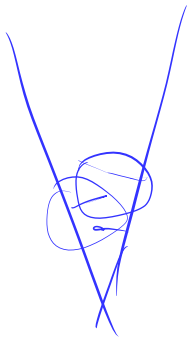
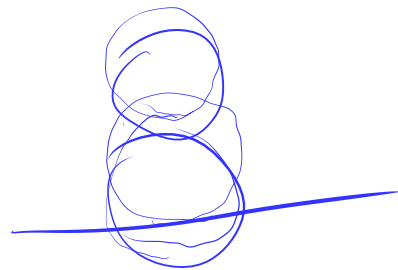
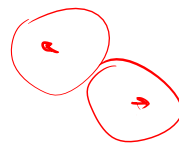
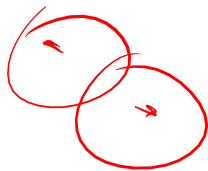
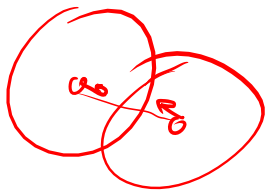
$$1s + \frac{1}{2}s + \frac{1}{4}s + \frac{1}{8}s$$

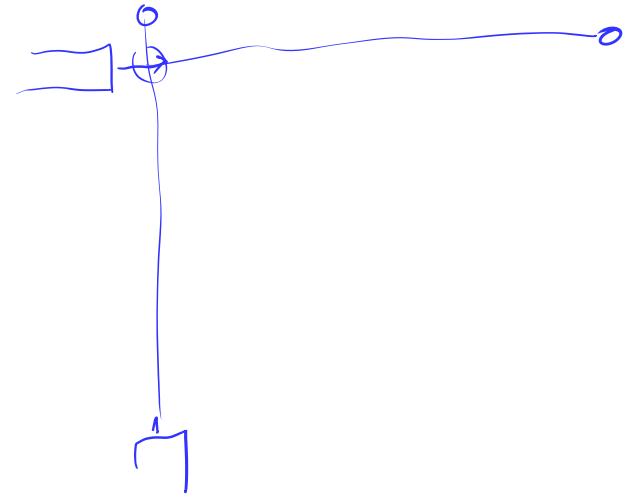
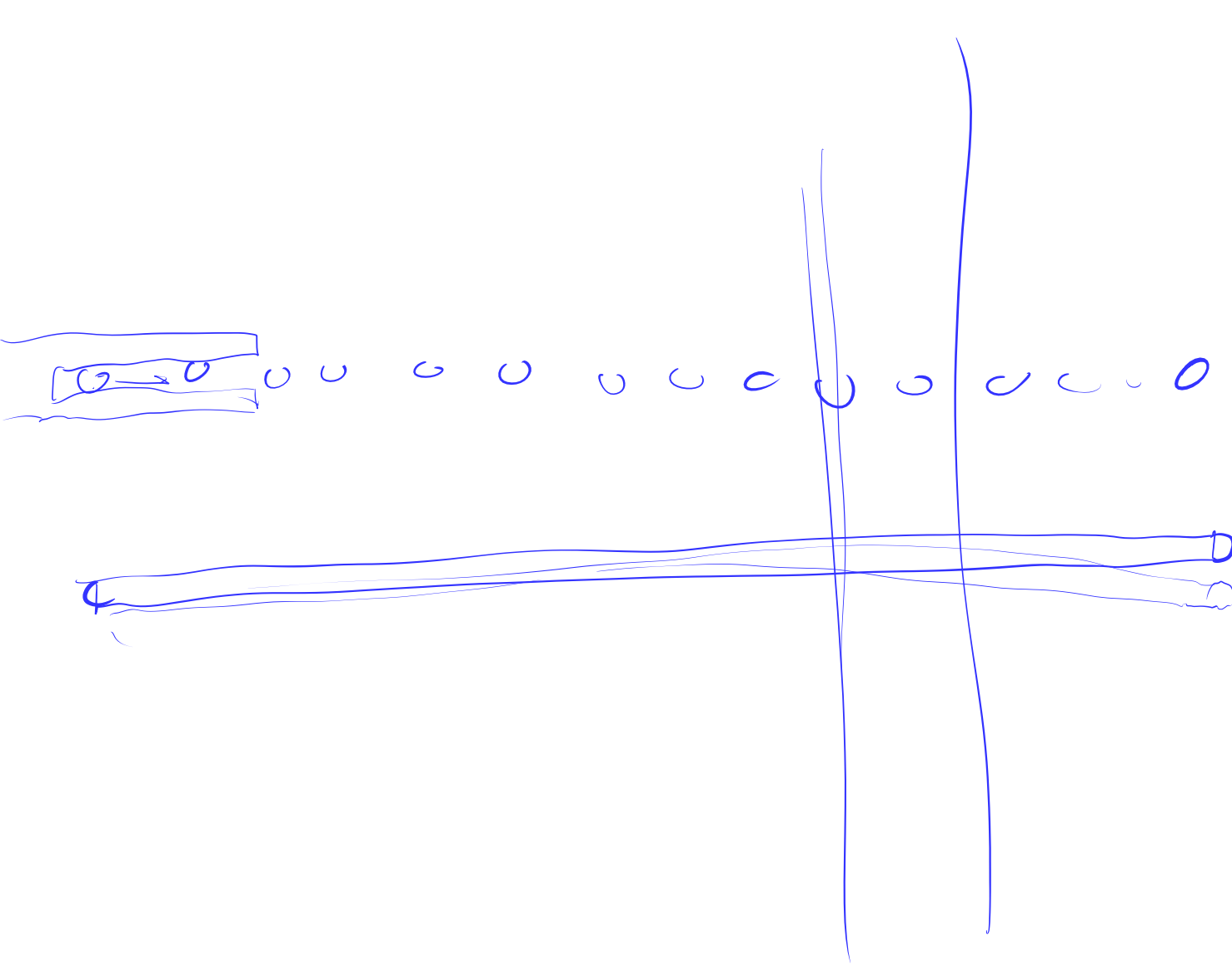
$$1.1111111111 \dots_2 \text{ s} = 10.0002s$$

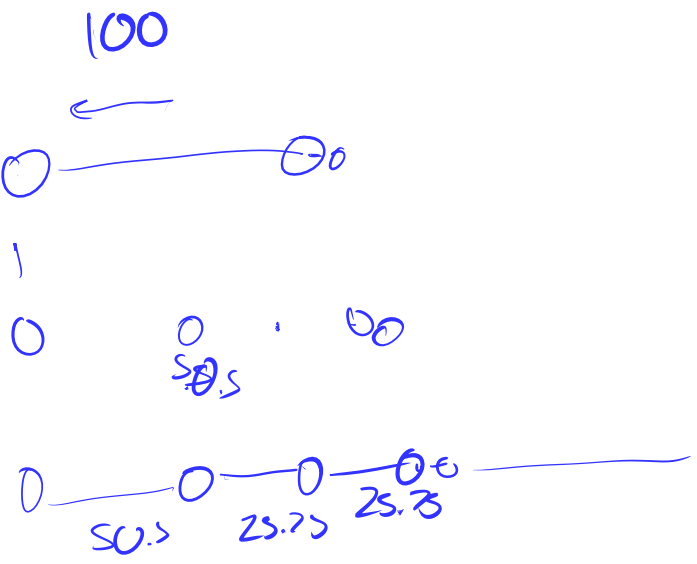
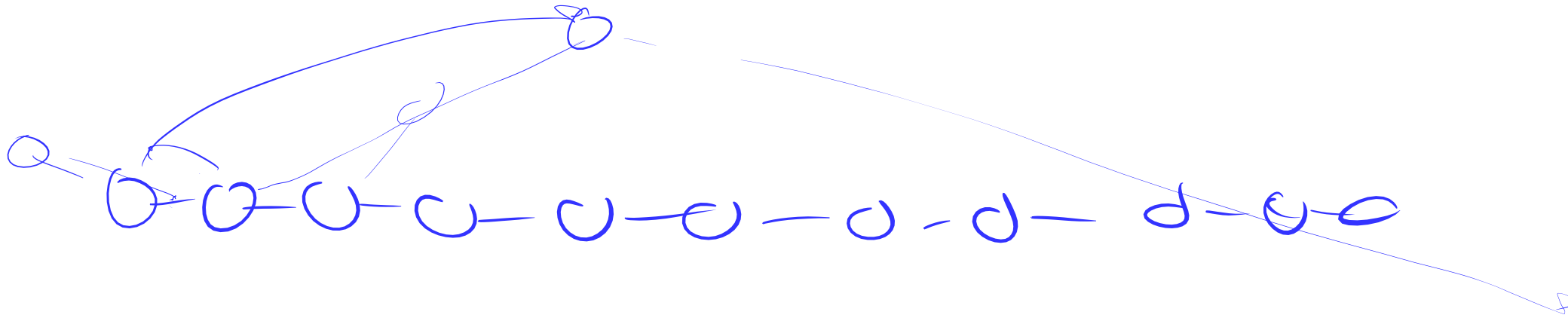
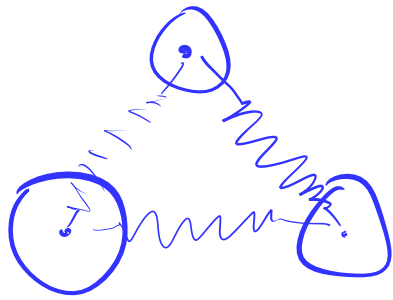
$t=0$



$t=1$







matrix!

Multigrid

