

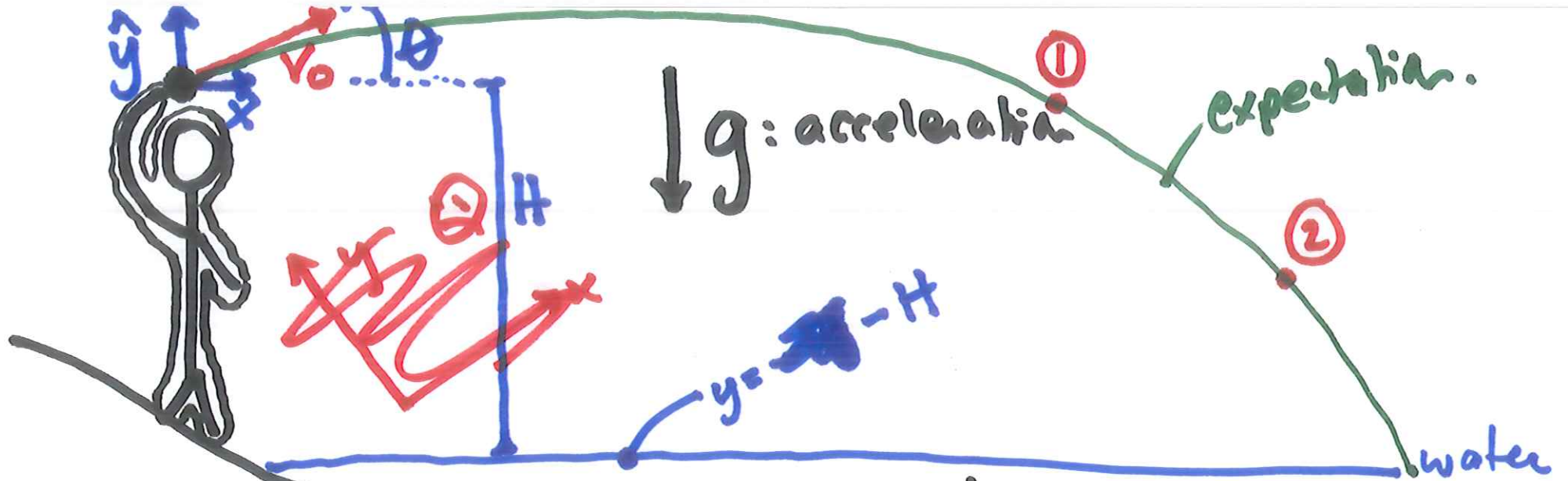
NYU Physics I — 2016-09-13

Agenda: - Qs.

- thrown stone

- vectors.

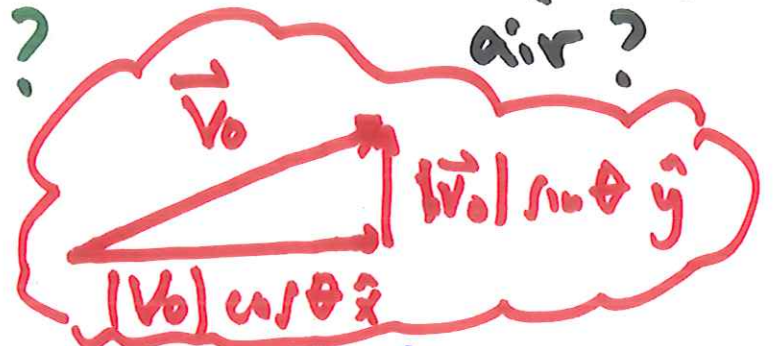
- calculus — ish!



how long is the stone in the air?  
 max. air?

$$\sim \sqrt{\frac{H}{g}}? \quad \sim \frac{H}{|V_0|}?$$

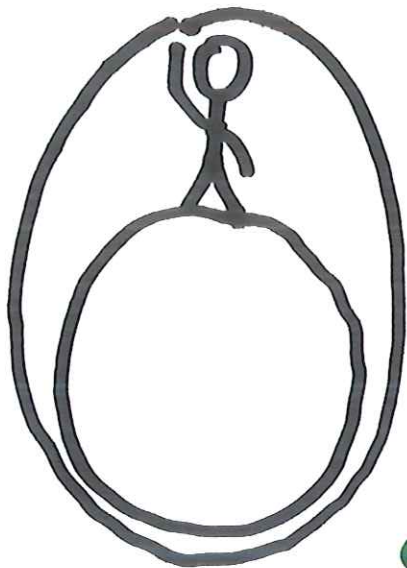
initial velocity:

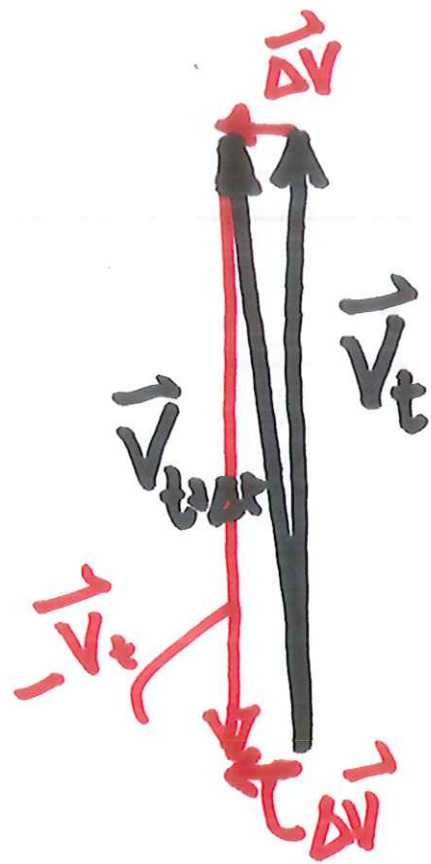


$$\vec{V}_0 = |V_0| \cos \theta \hat{x} + |V_0| \sin \theta \hat{y}$$

$$\frac{dv_y}{dt} = -g \quad \frac{dv_x}{dt} = 0 \text{ "unit vectors"}$$

"unit vectors."





$$\vec{a} \equiv \frac{d\vec{v}}{dt} = \lim_{\Delta t \rightarrow 0} \frac{\vec{v}_{t+\Delta t} - \vec{v}_t}{\Delta t}$$

$$\lim_{\Delta t \rightarrow 0} \left( \frac{\vec{v}_{t+\Delta t} - \vec{v}_t}{\Delta t} \right) =$$

$$\lim_{\Delta t \rightarrow 0} \left( \frac{\vec{\Delta v}}{\Delta t} \right)$$

