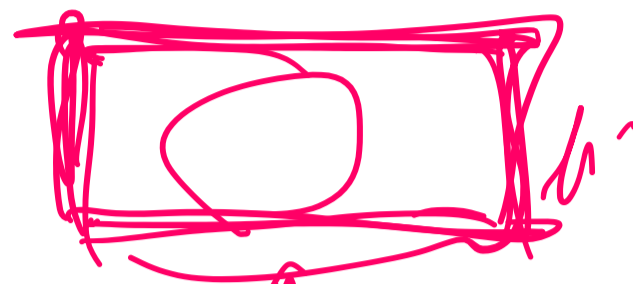


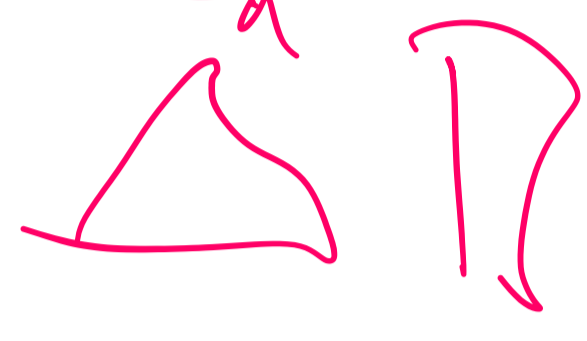


min time!
variational
calculus

$$V(x) = C$$



Cycloid



$$u^* = -Kx e^{-(T-t)}$$

$$K = \frac{T-A - (T-t)}{e + e^{-(T-t)}} = \frac{1}{1 + \frac{e^{-T+t}}{e^{T-t}}}$$

$$= \frac{1}{1 + e^{-T+t-T+t}} = \frac{1}{1 + e^{-2T+2t}}$$

$$= \frac{1}{1 + e^{-2(T-t)}}$$

When T very large

$K \approx 1$ most of the time
 $\approx \frac{1}{2}$ when t approaches T

