

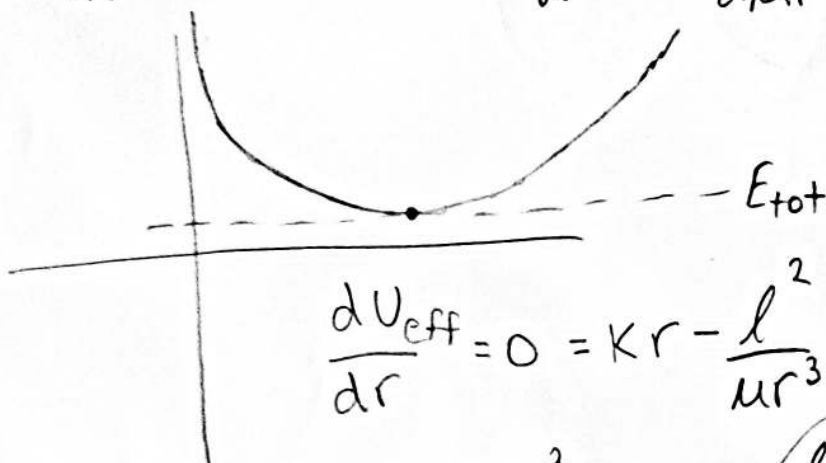
HW #23

CID 6265

①



$$U_{\text{eff}} = U(r) + U_{\text{cf}}(r) = \frac{1}{2}Kr^2 + \frac{l^2}{2\mu r^2}$$



$$r = \frac{\sqrt{l}}{K^{1/4} \mu^{1/4}}$$

$$F_{\text{cent.}} = \frac{\mu v^2}{r} = -Kr + \frac{l^2}{\mu r^3}$$

Below the equation, the term  $\mu r^2 \omega^2$  is written, with an arrow pointing to  $v$  in the numerator. Below that, the equation  $\frac{\mu r^2 l^2}{\mu^2 r^5} = \frac{l^2}{\mu r^3}$  is shown, with the term  $\frac{l^2}{\mu r^3}$  circled.

$$\begin{aligned} v &= r\omega \\ \omega &= \dot{\phi} \\ \dot{\phi} &= \frac{l}{\mu r^2} \\ \dot{\phi}^2 &= \frac{l^2}{\mu^2 r^4} \end{aligned}$$

$$\frac{\mu v^2}{r} = -Kr$$

$$\mu r \dot{\phi}^2$$

these  
just cancel  
out...

$$-kr = 0 \text{ then.}$$

This makes no sense  
though

Maybe  $F_{\text{centripetal}}$  is  
only defined by the force  
from the spring? Don't  
include the centrifugal term

$$F_{\text{cent.}} = \frac{\mu v^2}{r} = \frac{l^2}{\mu r^3} = -kr$$

$$r = \frac{(-1)^{1/4} \sqrt{l}}{K^{1/4} \mu^{1/4}}$$

②

