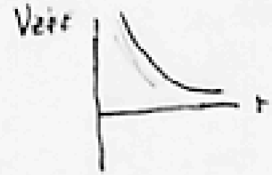
Dray 58 cont

There are 3 possible cases, viz:

a) $1 + \frac{2m\lambda}{L^2} > 0 \Rightarrow L^2 > -2m\lambda$

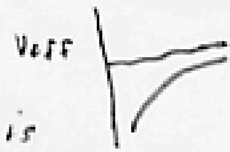


Veff = 0

b) $1 + \frac{2m\lambda}{L^2} = 0 \Rightarrow L^2 = -2m\lambda$

c) $1 + \frac{2m\lambda}{L^2} < 0 \Rightarrow L^2 \leq -2m\lambda$

require $\lambda < 0$, i.e. attractive force



In case a) the solution is

$$u = A \cos[\omega(\theta - \theta_0)] \Rightarrow$$

$$\boxed{r(\theta) = \frac{R}{\cos[\omega(\theta - \theta_0)]}}$$

with $\omega = \sqrt{1 + \frac{2m\lambda}{L^2}}$

In this case $r \geq R$ and

$r \to \infty$ as $\boxed{\omega(\theta - \theta_0) \to \pm \pi/2}$

So, the orbit spirals in from ∞ to R and then back out again.