No.
Date

Ch8.

23

由动能定理

(a) $\frac{1}{2}mv^2 - 0 = mgl$ 代入 $v = 4.85\,m/s$

(b) $r = 45\,cm = 0.45\,m$

~~通过最高点时速度~~

最高点时，由能量守恒

$\frac{1}{2}mv'^2 = mg(l-2r)$

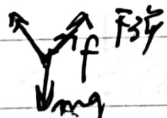
$\therefore v' \approx 2.42\,m/s$

29.(a) 由能量守恒 $\frac{1}{2}mv^2 = \frac{1}{2}kx^2$

$\therefore k = 1600\,N/m$

~~平衡... $= 0.15\,m$~~

由受力分析



$\therefore$ 能量守恒可得 $0 = mg(l+x)\sin\theta - \frac{1}{2}kx^2 - \mu mg\cos\theta\,(l+x)$

代入 $\therefore \mu \approx 0.18$

(b) 设距离为 x'

$\therefore$ 有 $(5.3+5.3-x')\frac{\sqrt{3}}{2}\mu mg = mg\cdot x'\cdot\frac{1}{2}$ $\quad (10.6-x')\cdot\frac{\sqrt{3}}{2}\cdot\mu = x'$

代入，解得 $x' = 2.52\,m$

40. $u=0 \rightarrow \frac{A}{r^{12}} = \frac{B}{r^6}$ $\therefore r^6 = \frac{A}{B}$ $\therefore r = \left(\frac{A}{B}\right)^{\frac{1}{6}}$

(b) if smaller. repulsive

(c) if larger attractive

42.

~~$W = F\cdot s\cdot\cos\theta =$~~

匀速运动 $\mu(mg + F\cdot\sin\theta) = F\cdot\cos\theta$

$W = F\cdot s\cdot\cos\theta$

联立：$W = 432.70\,J$

$W_{摩} = \mu(mg + F\cdot\sin\theta)\cdot s$

代入：$W_{摩} = 432.76\,J$.

62. 到达摩擦开始处

由动能定理 $\frac{1}{2}mv_t^2 - \frac{1}{2}mv_A^2 = -mgh$

$\therefore v_t = \sqrt{v_A^2 - 2gh} = \frac{2\sqrt{155}}{5}$

向上运动

$h = L\cdot\sin\theta = \frac{13}{20}\times\frac{1}{2} = \frac{13}{40}$

$a = \frac{\sum F}{m} = g\sin\theta + \mu g\cos\theta = \frac{245+98\sqrt{3}}{50}$

$v_t^2 > 2ah$ 故可以到达.

$\therefore v_{末} = \sqrt{v_t^2 - 2ah}$ $\therefore v_{末} \approx 1.93\,m/s$