

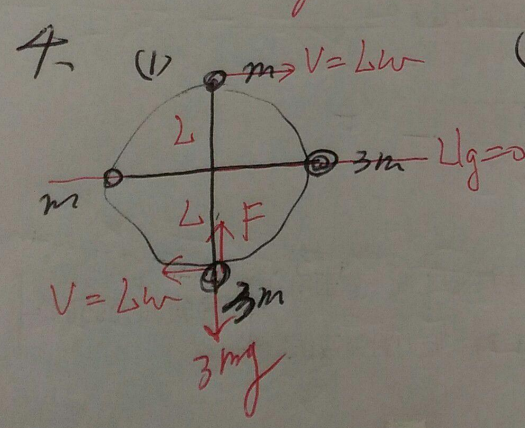
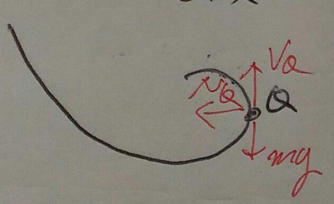
力學能守恆: $-\frac{10}{3} \times 10 \times 0.3 + 0 = -10 \times 10 \times 0.9 + \frac{1}{2} \times 10 \times v^2$
 $\therefore v = 4 \text{ (m/s)} \#$

2. 令 A 比 B 高 h

(A \rightarrow B) 力學能守恆: $mgh + 0 = 0 + \frac{1}{2} m (\sqrt{gk})^2$
 $\therefore h = \frac{k}{2} \#$

B 臨界速度

3. (P \rightarrow Q) 力學能守恆: $mgk + 0 = mgk + \frac{1}{2} m v_Q^2$
 $\therefore v_Q^2 = 2gk$
 Q 點向心力: $N_Q = m \frac{v_Q^2}{R} = 8mg \#$



(m+3m) 力學能守恆:

$$0 + 0 = mgL + (-3mgL) + \frac{1}{2} m v^2 + \frac{1}{2} 3m v^2$$

$\therefore v^2 = 9L \rightarrow v = \sqrt{9L}$
 $\rightarrow w = \frac{v}{L} = \sqrt{\frac{9}{L}} \#$

(2) 向心力: $\therefore 3m \frac{v^2}{L} = 3mg$
 $F - 3mg$
 $\therefore F = 6mg \#$

5.

$$\textcircled{1} K = \frac{GMm}{2r}$$

$$\begin{aligned} (1) W = E(5r) - E(r) &= -\frac{GMm}{2 \times 5r} - \left(-\frac{GMm}{2r}\right) \\ &= \frac{4}{10} \frac{GMm}{r} = \frac{4}{5} \frac{GMm}{2r} = \frac{4K}{5} \# \end{aligned}$$

$$\begin{aligned} (2) W = E(4r) - E(r) &= -\frac{GMm}{4r} - \left(-\frac{GMm}{2r}\right) \\ &\text{只有1/4} \rightarrow = \frac{3}{10} \frac{GMm}{r} = \frac{3}{5} \frac{GMm}{2r} = \frac{3K}{5} \# \end{aligned}$$

$$(3) E_b = -E(r) = \frac{GMm}{2r} = K \#$$

$$\begin{aligned} (4) -\frac{GMm}{2r} - \frac{1}{5}K &= -\frac{6GMm}{10r} \\ &= -\frac{GMm}{2 \times \frac{5}{6}r} = -\frac{GMm}{2r} \end{aligned}$$

$$\therefore r' = \frac{5}{6}r \#$$

6.

$$\frac{2k}{2k} \frac{2k}{2k}$$

$$2 \times \frac{1}{2} \times 2k \times \left(\frac{3}{8}L\right)^2 = \frac{9}{32} kL^2 \#$$

每段