【2021 看守学】

(1) $\begin{cases} T\cos\theta = (T_1+T_2)\cos\phi \\ T\sin\theta = (T_2-T_1)\sin\phi \end{cases}$ $\times \frac{\cos\phi}{\cos\phi}$

$T_2 = \dfrac{T(\sin\theta+\tan\phi\cos\theta)}{2\sin\phi} = \dfrac{T\sin(\theta+\phi)}{\sin 2\phi}$

$\tan\theta = -\tan\phi$

$\theta = -\phi$ 不正解 $\theta = \phi$

(2) $m\ddot{y} = -mg\sin\theta_y$

$\theta_y \ll 1$ より

$l_1\theta_y = y \Rightarrow l_1\ddot{\theta}_y = \ddot{y}$

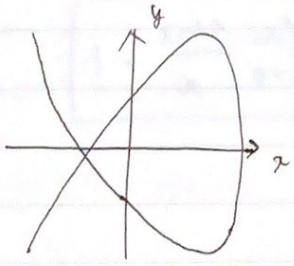
$ml\ddot{\theta}_y = -mg\theta_y$

$\ddot{\theta}_y = -\dfrac{g}{l}\theta_y \qquad \omega^2 = \dfrac{g}{l} \qquad T_y = 2\pi\sqrt{\dfrac{l_1}{g}}$

(3) $m(l_0+l_1)\ddot{\theta}_{yx} = -mg\theta_y$

$\ddot{\theta}_{yx} = -\dfrac{g}{l_0+l_1}\theta_{yx} \qquad T_x = 2\pi\sqrt{\dfrac{l_1+l_0}{g}}$

(4)



y軸 : ↓ ↑ ↓ 3

x軸 : → ← 2

3 : 2

$T_x = T_y = 2 : 3$

$\sqrt{l_1+l_0} : \sqrt{l_1} = 2 : 3$

3 : 2

$9(l_1+l_0) = 4l_1$

$5l_1 = 4l_0$

$l_1 : l_0 = 4 : 5$

$\lambda_x : \lambda_y = 2 : 3$