①

$v = u + at$

$10 = 0 + a(3)$

$a = \frac{10}{3}$

$\Sigma F = ma$

$F = 9(\frac{10}{3}) = 30\ N.$

②

$\frac{1}{2}(6)(2+5) = 3(7) \times 10$

$= 21$

③

$v^2 = u^2 + 2as$

$v^2 = 0 + 2(10)(0.4)$

$v^2 = 8$

$v = 2\sqrt{2}$

$0 = u^2 + 2(-10)(0.1)$

$2 = u^2$

$u = 1.4$

④.

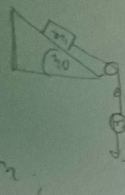
พลังงาน mgH

$\frac{30}{100} mgH = \frac{1}{2} m v^2$

$\frac{6}{10} gh = v^2$

$v = \sqrt{\frac{6}{10} gh}$

$=$



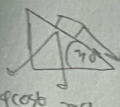
m_2 :

$m_2g - T = m_2a \qquad 40 - T = 4(7) \qquad T = 40 - 28$

$40 - T = 28 \qquad = 12$

m_1 :

$mg\sin\theta + T = m_1a$



$m_2g + mg\sin\theta = (m_1 + m_2)a$

$48 + 60\left(\frac{1}{2}\right) = 10a$

$4 + 2 = a$

$a = 7$

(1)

$T_1 - m_3g - T_2 = m_3a$

$T_2 - m_2g = m_2a$

$T_2 = 20 + 2(2) = 24$

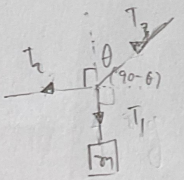
$T_1 - 30 - 24 = 3(2)$

$T_1 - 54 = 6$

$T_1 = 60$

$T_1 - T_2 = 60 - 24 = 36\ N$

(2)



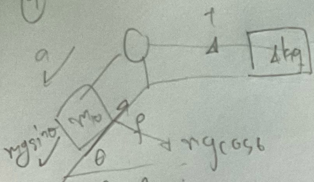
$\frac{T_1}{\sin(90+\theta)} = \frac{T_2}{\sin(180-\theta)}$

$\frac{T_1}{\cos\theta} = \frac{T_2}{\sin\theta}$

$\frac{mg}{\cos\theta} = \frac{T_2}{\sin\theta}$

$T_2 = mg\tan\theta$

(9)



$v^2 = u^2 + 2as$

$16 = 0 + 2(a)(4)$

$16 = 8a$

$a = 2$

$mg - T - \mu mg = ma$

$T = m_2 a$

$T = 8$ N.

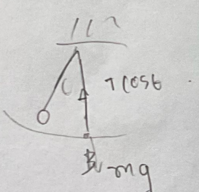
$100 - 8 - \mu 100 = 20$

$46 - \mu 50 = 10$

$\mu 50 = 36$

$\mu = \frac{36}{50}$

10.



$mg - T\cos\theta = 0$

$mg = T\cos\theta$

$T = \frac{mg}{\cos\theta}$

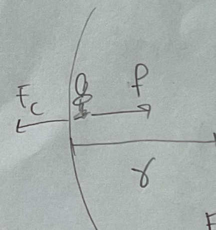
$\theta = \tan^{-1}\left(\frac{m_2 u_2}{m_1 u_1}\right)$

$g' = \frac{Gm}{R^2}$

$m = \frac{g' R^2}{G}$

(11)

$f = \mu mg\cos\theta$



$F_c = \frac{mv^2}{r} = f$

$\frac{mv^2}{r} = \mu mg\cos\theta$

$v \le \sqrt{\mu R g\cos\theta}$

(12)

$W = Fs$

$W = mas$

$W = m\left(\frac{1}{2}(6)(2+5)\right)$

$= (10)(21)$

$= 210$

(15)

$mL + mc\Delta t$

$0.1(333 + 4200(283))$

$0.1\,kg\left(333\,\frac{kJ}{kg}\right) + 4200\left(\frac{J}{kg \cdot K}\right)(283)(K)$

$0.1(333\,kJ) + (4.2\,J)(283)$

ตัวกลาง ①

$n_1 \sin\theta_1 = n_2 \sin\theta$

$\sin 60 = n_2 \sin 30^\circ$

$n_{21} = \dfrac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$

ตัวกลาง ②

$n_1 \sin\theta = n_2 \sin\theta$

$n_{22} = \dfrac{n_1 \sin\theta}{\sin\theta}$

$= \dfrac{\frac{\sqrt{3}}{2}}{\frac{\sqrt{2}}{2}} = \dfrac{\sqrt{3}}{\sqrt{2}}$

$\dfrac{n_{21}}{n_{22}} = \dfrac{\sqrt{3}}{\frac{\sqrt{3}}{2}}$

$\dfrac{n_{21}}{n_{22}} = 2 \qquad n_{21} = 2n_{22}$

$v = f\lambda \qquad f = \dfrac{1}{T}$

$= \dfrac{1}{5}\left(\dfrac{1}{2}\right)$

$= \dfrac{1}{10}$

$s = vt$

$5 = v(10)$

$v = \dfrac{1}{2}$

2

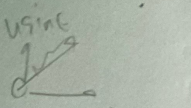
ที่ $20^\circ C$ $\quad v = 331 + 0.6(20)$

$= 343\ m/s$

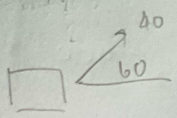
$s = vt$

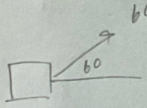
$100 = 343(t)$

$t =$



$100(4.184)(298)$





$\frac{kQ}{r} = \frac{kQ}{r}$

$\frac{kQ}{r} = \frac{kQ}{2r}$

min

$w = FS$

$w = 20S$

$w_2 = 30S$

$\frac{w_2}{w_1} = \frac{30S_2}{20S_1} = \frac{1}{4}$

$120 S_2 = 20 S_1$

$6S_2 = S_1$

$S_2 = \frac{S_1}{6}$

$S = vt$

$x_1 + x_2 = vt$

$t_1 = \frac{x_1 + x_2}{2v}$

$S = vt$

$t_2 = \frac{x_3}{v}$

$\frac{t_1}{t_2} = \frac{\frac{x_1 + x_2}{2v}}{\frac{x_3}{v}}$

$= \frac{x_1 + x_2}{2\sqrt{x_1^2 + x_2^2}}$

$F = m(10)$

$F = m_2(24)$

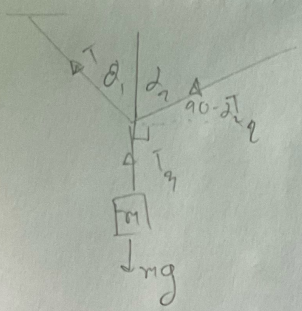
$\frac{m_1}{m_2} = \frac{\frac{F}{10}}{\frac{F}{24}}$

$= \frac{24}{10}$

$\frac{kq}{10}$

120

140



$$\frac{T}{\sin(180-2)} = \frac{mg}{\sin(\theta_1+\theta_2)}$$

$$T = \frac{mg(\sin\theta_2)}{\sin(\theta_1+\theta_2)}$$

10

$v = u+at$

$0 = u+at$

$-at = u$

$a = \frac{u}{\Delta t}$

$F = ma$

$\frac{mu}{\Delta t}$

$T - mg = ma$

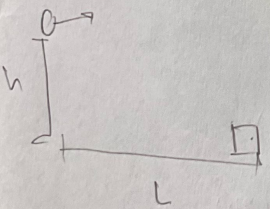
$\frac{T-mg}{m} = a$

$\frac{T}{m} - g$

$W_{TAN} = 900 = mg$

$g' = \frac{Gm}{3r^2}$

$\frac{900}{3}$



$s = ut$

$u = \frac{L}{t}$

$u = \frac{L}{\sqrt{\frac{2h}{g}}}$

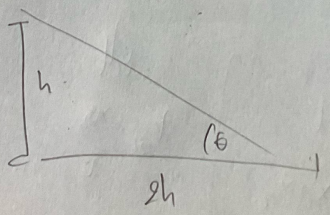
$u = L\left(\frac{g}{2h}\right)^{\frac{1}{2}}$

$s = ut + \frac{1}{2}gt^2$

$h = 0 + \frac{g}{2}t^2$

$t^2 = \frac{2h}{g}$

$t = \sqrt{\frac{2h}{g}}$



$\tan\theta = \frac{h}{2h}$

$\theta = \arctan\left(\frac{1}{2}\right)$

$Q\pi r^2$

$v^2 = u^2 + 2gs$

$0 = (Q\pi r^2)^2 + 2gs$

$s = \frac{(Q\pi r^2)^2}{2g}$

$v = \sqrt{gd}$