① $P = \frac{F}{A}$

$F = PA$

$= (6 \times 10^{-4})(85 \times 133,322)$

$= 6.8\ N$

---

② $\pi(0.015)^2(30) = \pi(5 \times 10^{-6})^2(0.1)n$

$n = 2.7 \times 10^{9}$

---

⑥ $P = \frac{F}{A}$

$= \frac{3}{1 \times 10^{-4}}$

$= 30000\ Pa$

$= 3 \times 10^4 \times 0.0075 = 225\ mm\ Hg$

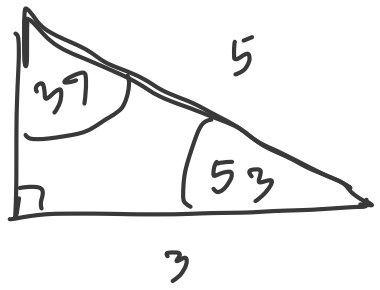
---

⑧ $330 = \frac{0.7}{t}$

$T = 2.12 \times 10^{-3}$

---

⑨



2.37°

3.53°

(10) حركة x

$u_x = \frac{S}{t}$

حركة y

$S = s$

$u = u$

$v =$

$a = 10$

$t = 0.4$

$s = u(0.4) + \frac{1}{2} 10 (0.4)^2$

$u = 5.5$

---

(11)

$1 \xrightarrow{100} \frac{1}{2} \xrightarrow{100} \frac{1}{4} \xrightarrow{100} \frac{1}{8}$

300 دورة في الدقيقة

---

(14)

$P_1 + \cancel{\rho g h_1} + \frac{1}{2}\rho v_1^2 = P_2 + \cancel{\rho g h_2} + \frac{1}{2}\rho v_2^2$

$A_1 v_1 = A_2 v_2$

$\cancel{A_1}(4) = \frac{1}{3}\cancel{A_1} v_2$

$v_2 = 12$

$(5 \times 10^5) + \frac{1}{2} 10^3 (4)^2 = P_2 + \frac{1}{2} 10^3 (12)^2$

$P_2 = 4.36 \times 10^5 \ N/m^2$

(15) $R = \frac{8\mu L}{\pi r^4}$ $\quad R \downarrow = d$

triple

$R = \frac{8\mu(0.2)}{\pi(0.84\times10^{-3})}$

$R = 606.61\ \mu$

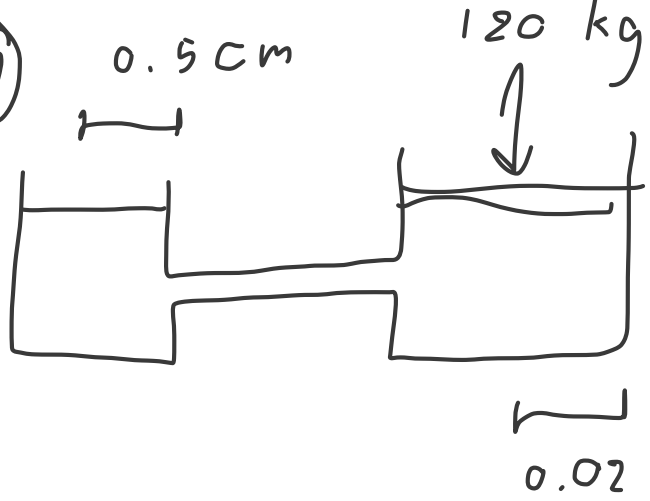
peri ✡

$R = \frac{8\mu(0.04)}{\pi(10^{-3})}$

$= 101.91\ \mu$

---

(17)



$\frac{F}{\pi(0.5\times10^{-2})^2} = \frac{120}{\pi(0.02)^2}$

$F = 75\ N$

---

(18) $v = \sqrt{2gh}$

$H = 0 + \frac{1}{2}(10)t^2$

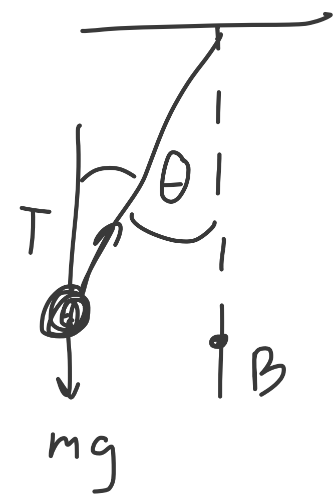
$t = \sqrt{\frac{H}{5}}$

$\frac{210\ hH}{5}$

$S_x = \sqrt{2gh\ \frac{H}{5}}$

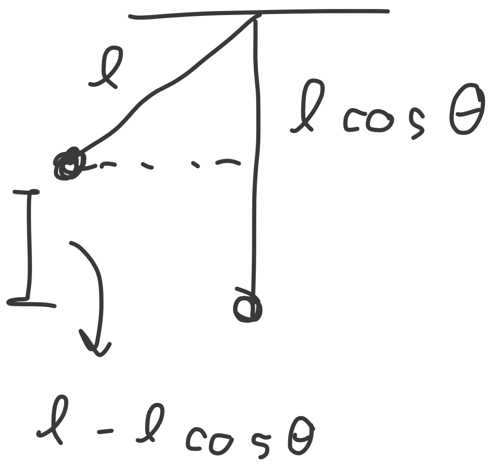
$S_x = 2\sqrt{hH}$

(19)



$$T\cos\theta - mg = \frac{mv^2}{R}$$

$$v^2 = R(T\cos\theta - mg)$$



$$mg(l - l\cos\theta) = \frac{1}{2}mv^2$$

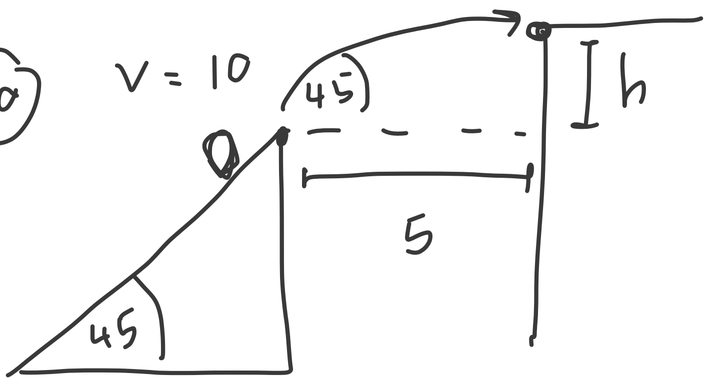
$$2gl(1 - \cos\theta) = l(T\cos\theta - mg)$$

$$2g - 2g\cos\theta = T\cos\theta - mg$$

$$2 - 2\cos\theta = T\cos\theta - m$$

---

(20)



$$h = 5\sqrt{2}\,\frac{1}{\sqrt{2}} - \frac{1}{2}10\,\frac{1}{2}$$

$$= 2.5\ m$$

แกน x

$s = 5$

$u = 5\sqrt{2}$

$v = 5\sqrt{2}$

$a =$

$t =$

$5 = 5\sqrt{2}\,t$

$t = \frac{1}{\sqrt{2}}$

แกน y

$s = h$

$u = 5\sqrt{2}$

$v =$

$a = -10$

$t = \frac{1}{\sqrt{2}}$

ข้อ 2

① $\frac{1}{2} = \frac{1}{1} + \frac{1}{s'}$ $\qquad m = -\frac{2}{1}$

$s' = -2$

---

② $R = \frac{10}{3}$ $\qquad f = 12$

---

③ $F = qVB$ $\qquad V = \frac{2\pi r}{T} \frac{1}{1}$

$= \frac{\pi v}{T}$

---

⑤ A// $\quad 9 = \frac{(9\times10^{9})Q}{0.01}$

$Q = 7.78 \times 10^{-12}$

B// $\quad 9 = \frac{(9\times10^{9})Q}{1.5\times10^{-2}}$

$Q = 1.17 \times 10^{-11}$

$$F = \frac{k(7.78\times10^{-12})(1.17\times10^{-11})}{0.5^2}$$

$= 3.29 \times 10^{-12}$ N

(6) $\frac{d_2}{d_3} = \frac{d_1}{2} \quad \frac{3}{2 d_1}$

$= \frac{3}{4}$

(7) ให้ W_3 เป็นจุดหมุน

$$\vec{w}_1(d_1 + d_3) + \vec{w}_2(d_3 - d_2) = Td_3$$

$$\vec{w}_1(\cancel{d_1} + \frac{2}{3}\cancel{d_1}) + \frac{\vec{w}_1}{4}(\frac{2}{3}\cancel{d_1} - \frac{\cancel{d_1}}{2}) = T\frac{2}{3}\cancel{d_1}$$

$$\frac{5}{3}\vec{w}_1 + \frac{1}{24}\vec{w}_1 = T\frac{2}{3}$$

$$40\vec{w}_1 + \vec{w}_1 = 16T$$

$$41\vec{w}_1 = 16T$$

$$T = \frac{41}{16}\vec{w}_1$$

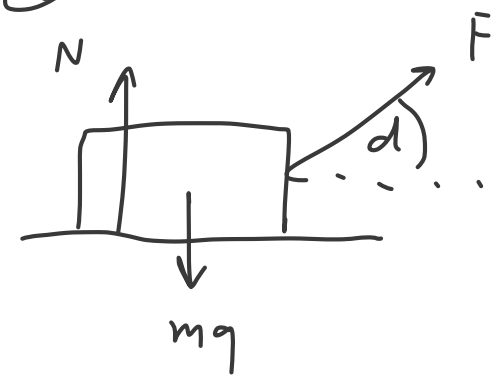
$$\frac{41}{16}\vec{w}_1 = \vec{w}_1 + \vec{w}_2 + \vec{w}_3$$

$$\frac{41}{16}\vec{w}_1 = \vec{w}_1 + \frac{\vec{w}_1}{4} + \vec{w}_3$$

$$\vec{w}_3 = (\frac{41}{16} - 1 - \frac{1}{4})\vec{w}_1$$

$$= \frac{21}{16}\vec{w}_1$$

(8)



$$N + F\sin\alpha = mg$$

$$N = mg - F\sin\alpha$$

$$F\cos\alpha = \mu N$$

$$F\cos\alpha = \mu(mg - F\sin\alpha)$$

$$F\cos\alpha = \mu mg - \mu F\sin\alpha$$

$$F(\cos\alpha + \mu\sin\alpha) = \mu mg$$

$$F = \frac{\mu mg}{\cos\alpha + \mu\sin\alpha}$$

---

(9)

$$0 = mv_1 - 2mv_2$$

$$v_1 = 2v_2 \qquad v_2 = \frac{v_1}{2}$$

$$\frac{E_{k1}}{E_{k2}} = \frac{\frac{1}{2}mv_1^2}{\frac{1}{2}m\left(\frac{v_1}{2}\right)^2} = 2$$

(10)

$T\cos\alpha = mg$

$T\sin\alpha = ma_c$

$\cos\alpha = \frac{g}{a_c}\sin\alpha$

$\tan\alpha = \frac{ma_c}{mg}$

$\tan\alpha = \frac{a_c}{g}$

$\frac{\sin\alpha}{\cos\alpha} = \frac{a_c}{g}$

$\sin\alpha = \frac{a_c}{g}\cos\alpha$

$T\frac{a_c}{g}\cos\alpha = ma_c$

$T = \frac{mg}{\cos\alpha}$ — (1)

$T\frac{g}{a_c}\sin\alpha = mg$

$T = \frac{ma_c}{\sin\alpha}$

$$P = \frac{F}{A}$$

$$F = PA$$

$$F = ma - mg$$

$$a = \frac{F}{m} \quad \frac{F + mg}{m}$$

$$m$$