

= 804

Dane:

$$r = 25 \text{ cm}$$

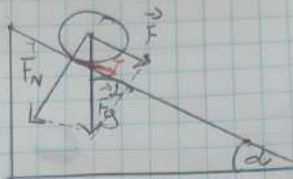
$$m_b = 0,5 \text{ kg}$$

$$m_k = 2 \text{ kg}$$

$$h = 1,5 \text{ m}$$

$$s = 3 \text{ m}$$

$$g = 10 \frac{\text{m}}{\text{s}^2}$$



T - silita tawala  
 $F_g$  - silita cilindrasi  
 $F \cdot N$  - silitadaya  
 $N$  silita radesi

$$\textcircled{1} \sin \alpha = \frac{F}{F_g} \Rightarrow F = F_g \sin \alpha$$

$$\text{atau}$$

$$\cos \alpha = \frac{N}{F_g} \Rightarrow N = F_g \cos \alpha$$

$$\textcircled{3} \sum \tau = M$$

$$\epsilon = \frac{a}{r}$$

$$\textcircled{4} \vec{M} = \vec{T} \times \vec{r}$$

$$\vec{M} = \vec{T} \times \vec{r}$$

$$M = T \cdot r \cdot \sin 90^\circ$$

$$M = T \cdot r$$

$$\textcircled{5} \sum \tau = M$$

$$\sum \tau = T \cdot r$$

$$\sum \tau = (F - ma) \cdot r$$

$$\sum \tau = (F - ma) \cdot r^2$$

$$\sum \tau = F r^2 - ma r^2$$

$$\sum \tau + ma r^2 = F r^2$$

$$a (\sum \tau + m r^2) = F r^2$$

$$a = \frac{F r^2}{\sum \tau + m r^2}$$

$$a = \frac{F \sin \alpha \cdot r^2}{\sum \tau + m r^2}$$

$$a = \frac{m g \sin \alpha \cdot r^2}{\sum \tau + m r^2}$$

$$a = \frac{m g \cdot \frac{h}{s} \cdot r^2}{\sum \tau + m r^2}$$

$$a = \frac{m g h r^2}{s (\sum \tau + m r^2)}$$

$$\textcircled{6} \sum \tau_u = \frac{2}{5} m r^2$$

$$\sum \tau_w = \frac{1}{2} m r^2$$

Dla kuli:  
 $\frac{2}{5} m r^2$

Dla waleci:  
 $\frac{1}{2} m r^2$

to  
nac  
Lin

$$\begin{aligned} \sum \tau &= (F-ma)r \\ \sum \tau &= F_r^2 + mar^2 \\ \sum \tau + mar^2 &= F_r^2 \\ a(\sum \tau + mr^2) &= Fr^2 \end{aligned}$$

$$\begin{aligned} a &= \frac{F \sin \alpha \cdot r^2}{\sum \tau + mr^2} \\ a &= \frac{mg \sin \alpha \cdot r^2}{\sum \tau + mr^2} \\ a &= \frac{mg \cdot \frac{1}{2} \cdot r^2}{\sum \tau + mr^2} \\ a &= \frac{mghr^2}{s(\sum \tau + mr^2)} \end{aligned}$$

⑥

$$\begin{aligned} \sum \tau &= \frac{2}{5}mr^2 \\ \sum \tau &= \frac{1}{2}mr^2 \end{aligned}$$

Dia kuli:

$$a_k = \frac{mghr^2}{s(\sum \tau + mr^2)}$$

$$a_k = \frac{mghr^2}{s(\frac{2}{5}mr^2 + mr^2)}$$

$$a_k = \frac{mghr^2}{s \cdot \frac{7}{5}mr^2}$$

$$a_k = \frac{gh}{\frac{7}{5}s}$$

$$a_k = \frac{5gh}{7s}$$

Dia walai:

$$a_w = \frac{m_w g h r^2}{s(\sum \tau_w + m_w r^2)}$$

$$a_w = \frac{m_w g h r^2}{s \cdot \frac{2}{7}m_w r^2}$$

$$a_w = \frac{gh}{\frac{2}{7}s}$$

$$a_w = \frac{7gh}{2s}$$

⑦

$$\frac{a_k}{a_w} = \frac{\frac{5gh}{7s}}{\frac{7gh}{2s}} \Rightarrow \frac{a_k}{a_w} = \frac{15}{49}$$

$$s = \frac{4}{2a_k}$$

$$\frac{2s}{a} = t^2$$

$$t = \sqrt{\frac{2s}{a}}, \quad t_k = \sqrt{\frac{2s}{a_k}}, \quad t_w = \sqrt{\frac{2s}{a_w}}$$

⑧

$$\frac{t_w}{t_k} = \frac{\sqrt{\frac{2s}{a_w}}}{\sqrt{\frac{2s}{a_k}}} \Rightarrow \frac{t_w}{t_k} = \sqrt{\frac{a_k}{a_w}} = \sqrt{\frac{49}{15}}$$

$$\frac{t_w}{t_k} = \sqrt{\frac{15}{49}}$$