

Kelompok 7.

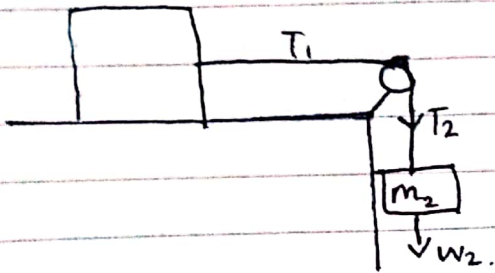
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2. Tri Lestari 2013022058

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- Persamaan gerak.

* Persamaan mekanika Newtonia < Katrol >.



massa katrol diabaikan dan bidang datar licin.

→ tinjauan benda 1

$$\sum F = m \cdot a$$

$$T_1 = m_1 \cdot a$$

$$T = m_1 \cdot a$$

→ tinjauan benda 2.

$$\sum F = m \cdot a$$

$$w_2 - T_2 = m_2 \cdot a$$

$$T_2 = w_2 - m_2 \cdot a$$

$$T = w_2 - m_2 \cdot a$$

tegang tali sama besar maka:

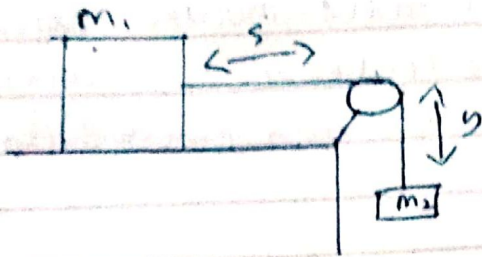
$$m_1 \cdot a = w_2 - m_2 \cdot a$$

$$m_1 \cdot a + m_2 \cdot a = w_2$$

$$a = \frac{w_2}{m_1 + m_2}$$

$$a = \frac{w_2}{m_1 + m_2}$$

* Persamaan mekanika Lagrangian <kontrol>.



$$T = \frac{1}{2} m_1 \dot{x}_1^2 + \frac{1}{2} m_2 \dot{y}_2^2$$

$$V = m_1 g y_1 + m_2 g y_2$$

$$\dot{x}_1 = \frac{dx_1}{dt}$$

$$x_1 = s \Rightarrow \dot{x}_1 = \dot{s}$$

$$y_2 = -(L - s) \Rightarrow \dot{y}_2 = \dot{s}$$

$$T = \frac{1}{2} m_1 \dot{s}^2 + \frac{1}{2} m_2 \dot{s}^2 = \frac{1}{2} (m_1 + m_2) \dot{s}^2$$

$$V = m_2 g (L - s)$$

$$L = \frac{1}{2} (m_1 + m_2) \dot{s}^2 - m_2 g (L - s)$$

$$\frac{\partial L}{\partial s} - \frac{d}{dt} \frac{\partial L}{\partial \dot{s}} = 0$$

$$\frac{\partial L}{\partial s} = -m_2 g$$

$$\frac{\partial L}{\partial \dot{s}} = (m_1 + m_2) \dot{s}$$

$$\frac{\partial L}{\partial s} - \frac{d}{dt} \frac{\partial L}{\partial \dot{s}} = -m_2 g - (m_1 + m_2) \ddot{s} = 0$$

$$-m_2 g - (m_1 + m_2) \ddot{s} = 0$$

$$\ddot{s} = -\frac{m_2 g}{m_1 + m_2}$$