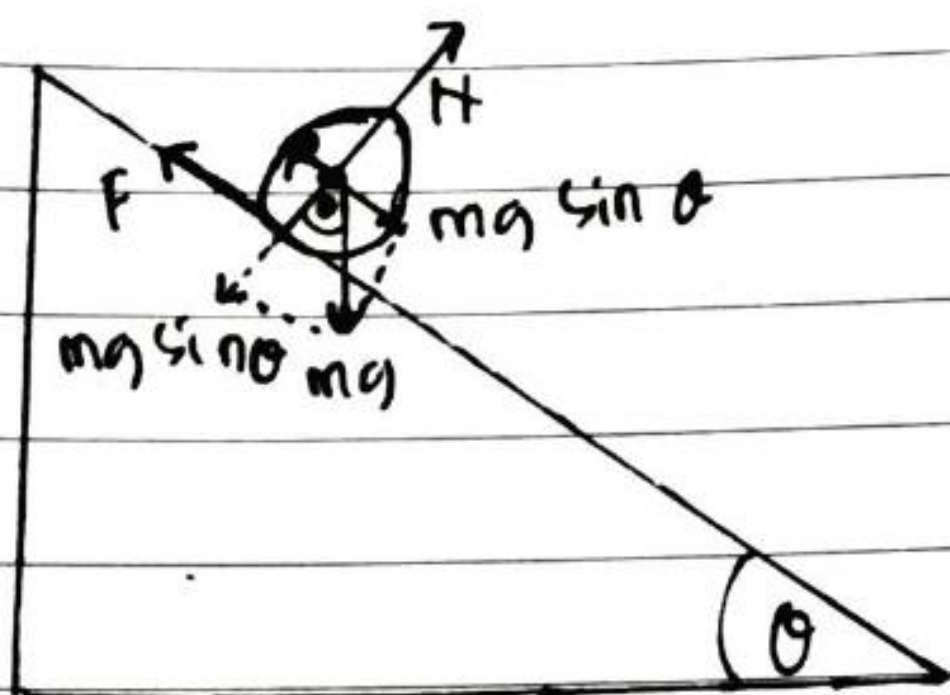


Kelompok 5:

Anggota : 1. Fadiah Farah Khoirunnisa 2013022016
2. Gustin Wardani 2013022030
3. Elpin Nurul Rahmayani 2013022038

Persamaan mekanika Lagrange dan Newton Pada bidang miring



$$\Sigma F = m \cdot a$$

$$mg \sin \theta - f = ma$$

$$mg \sin \theta - \frac{1}{R^2} a = ma$$

$$mg \sin \theta = ma + \frac{1}{R^2} a$$

$$\tau = f R = I \cdot \alpha$$

$$f \cdot R = I \cdot \frac{a}{R}$$

$$f = \frac{I}{R^2} a$$

$$\frac{mg \sin \theta}{m + \frac{I}{R^2}} = a$$

Dik : 1. $q_1 = z$

2. $V = -mgz \sin \theta$

3. $T = \frac{1}{2} m \dot{z}^2 + \frac{1}{2} I \frac{\dot{z}^2}{R^2}$

4. $L = T - V$

$$= \frac{1}{2} m \dot{z}^2 + \frac{1}{2} I \frac{\dot{z}^2}{R^2} + mgz \sin \theta$$

5. $Q_k = 0$

6. $\frac{d}{dt} \left(\frac{\partial L}{\partial \dot{z}} \right) = \frac{\partial L}{\partial z}$

$$\frac{d}{dt} \left(m \dot{z} + I \frac{\dot{z}}{R^2} \right) = mg \sin \theta$$

$$\frac{d}{dt} \left(m + \frac{I}{R^2} \right) \dot{z} = mg \sin \theta$$

$$\dot{z} = \frac{mg \sin \theta}{m + \frac{I}{R^2}}$$