



2016-17-2017-18

$$\vec{F} = m\vec{a} \text{ පරිදිමය වැදගත්}$$

$$\rightarrow \vec{O} = M\vec{a}_2 + m(\vec{a}_2 - \vec{a}_1 \cos \alpha) \quad \bullet$$

$$\text{අනෙකුත් } \vec{F}_1 = mg \sin \alpha$$

$$= m\vec{a}_1 + \vec{a}_2 \cos \alpha \quad \bullet$$

$$\vec{a}_2 = \frac{mg \sin \alpha \cos \alpha}{M + m \sin^2 \alpha} \text{ සිට ලැබේ}$$

$$\vec{F} = m\vec{a}_2 \text{ අනුව වැදගත්}$$

$$R \sin \alpha = M + m \vec{a}_2$$

$$R = \frac{M mg \cos \alpha}{M + m \sin^2 \alpha}$$

$$\text{හෙය } 144 \text{ km h}^{-1} = 40 \text{ ms}^{-1}$$

ප්‍රත්‍යක්ෂ බලය P වේ

$$Pv = H \text{ (සමාන)}$$

$$P = \frac{H}{40}$$

$$R = 400 \text{ N} \leftarrow \vec{v} = 40, a = 0$$

සම්පූර්ණ වියදම් වැඩිවන බවයි

$$\vec{F} = m\vec{a} \text{ වැදගත්}$$

$$P - R = m \times 0$$

$$P = R$$

$$\frac{H}{40} = 400 \Rightarrow H = 16000 \text{ W}$$

$$H = 16 \text{ kW}$$

$$24 \text{ km h}^{-1} = \frac{20}{3} \text{ ms}^{-1}$$

$$\text{ප්‍රත්‍යක්ෂ බලය } P_1 = \frac{16 \times 1000}{20/3} \text{ N}$$

$$R_1 + R_2 = 600 \text{ N} \rightarrow \vec{v} = \frac{20}{3}$$

වේගය වියදම් කළ විට ප්‍රතික්ෂේප වීමට ඇති බවයි.

$$\vec{F} = m\vec{a} \rightarrow$$

$$P_1 - R_1 - R_2 = 1600 \times \vec{a}_1$$

$$\frac{16 \times 1000}{20} \times 3 - 600 = 1600 \vec{a}_1$$

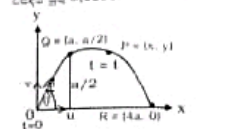
$$\Rightarrow \vec{a}_1 = \frac{18}{16} = \frac{9}{8} \text{ ms}^{-2}$$

$$\text{ප්‍රතික්ෂේප } \vec{F} = m\vec{a} \text{ වැදගත්}$$

$$T - R_2 = 600 \times \vec{a}_1$$

$$\Rightarrow T = \left(600 \times \frac{9}{8}\right) + 200 = 875 \text{ N}$$

01. (a) ප්‍රතික්ෂේපය වුවද පරිවරණය නොවිය යුතුයි



O → P වෙත වැටීමට වලංගු

$$S = ut + \frac{1}{2} at^2 \text{ වැදගත්}$$

$$-x = ut \quad \bullet$$

$$y = ut - \frac{1}{2} gt^2 \quad \bullet$$

02. (b) 1 සිට 1 දක්වා පරිවරණය

$$y = \frac{3x}{u} - \frac{g}{2u^2} x^2 \text{ සිට ලැබේ}$$

$$Q = \left[\frac{a}{2} \right] \Rightarrow R = (4a, 0) \text{ අනෙකුත් වැටීම}$$

වේගය සමාන වන්නේ නැතිවේ.

$$\frac{\partial}{\partial t} = \frac{\partial x}{\partial t} \frac{\partial}{\partial x} + \frac{\partial y}{\partial t} \frac{\partial}{\partial y} \quad \bullet$$

$$\Rightarrow \frac{1}{2} = \frac{y}{u} - \frac{3x}{2u^2} \quad \bullet$$

$$0 = 4a \frac{y}{u} - \frac{3}{2u^2} 16a^2 \quad \bullet$$

$$\Rightarrow 0 = \frac{y}{u} - \frac{4a}{2u^2} \quad \bullet$$

$$\bullet \bullet \bullet \text{ වෙත } \frac{1}{2} = \frac{3y}{2u^2}$$

$$\Rightarrow u^2 = 3y \Rightarrow u = \sqrt{3y}$$

$$\text{පරිවරණය } \bullet \bullet \bullet \text{ වෙත } v = 2 \sqrt{\frac{g}{3}}$$

ප්‍රත්‍යක්ෂ වේගය එක වන්නේ 0 වැනි වේගය වේ.

$$\tan \theta = \frac{y}{x} \Rightarrow \theta = \tan^{-1} \left(\frac{2}{3} \right)$$

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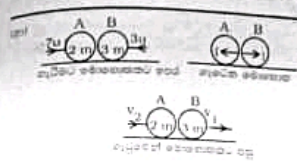
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පළමු පරිවරණය වුවද ප්‍රතික්ෂේපය නොවේ.

$$(2m \times 7u) + (3m \times -3u) = 2mv_2 + 3mv_1$$

$$5u = 2v_2 + 3v_1 \quad \bullet$$

$$v_1 - v_2 = e(7u - 3u) \quad \bullet$$

$$\bullet \bullet \bullet \text{ වෙත } v_2 = u(1 + 4e)$$

$$B \text{ වෙත } v_1 = 3mv_1 = 3m(3u)$$

$$= 3mu(1 + 4e) + 9mu$$

$$= 12mu(1 + e)$$

$$\bullet \bullet \bullet \text{ වෙත } v_2 = u - 6eu \text{ සිට ලැබේ}$$

ප්‍රතික්ෂේපය වුවද A වෙත ප්‍රතික්ෂේපය වේ නම්

$$v_2 = 0 \text{ විය යුතුය. නම් සලකම}$$

$$u - 6eu = 0 \Rightarrow e = \frac{1}{6}$$

$$v_1 = \frac{1}{2} \times 2m \times 49u^2 + \frac{1}{2} \times 3m \times 9u^2$$

$$= \frac{125}{2} mu^2$$

$$v_1 = \frac{1}{2} \times 3m \times v_1^2 \left(\text{වෙත } e = \frac{1}{6} \right)$$

$$= \frac{1}{2} \times 3m \times \frac{25u^2}{9}$$

$$= \frac{1}{15} \times 3m \times \frac{25u^2}{9}$$

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ප්‍රතික්ෂේප වීම නැතිවේ.

P වෙත ප්‍රතික්ෂේපය වුවද P වෙත ප්‍රතික්ෂේපය වේ.

Q වෙත ප්‍රතික්ෂේපය වුවද Q වෙත ප්‍රතික්ෂේපය වේ.

$$\frac{1}{2} m_1 a_1^2 + \frac{1}{2} m_2 a_2^2 = mg a \sin \theta$$

$$= 3 mg a \sin \theta = 0$$

$$2m_1 a_1^2 = 2 mg a \sin \theta$$

$$a_1^2 = g \sin \theta$$

$$P \text{ වෙත } \vec{F} = m\vec{a} \text{ වැදගත්}$$

$$R - mg \sin \theta = m a_1^2 \Rightarrow$$

$$R = mg \sin \theta - mg \sin \theta = 0$$

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