

Svar till tentamensuppgifter

augusti 2005

$$2. \quad s = \frac{\lambda}{M} \left(\frac{d_1^2 + d_2^2 - d_3^2}{2} + d_1 d_2 \right)$$

$$s \approx 2,5 \text{ m}$$

$$3. \quad T = \frac{1}{2 \cos 15^\circ} \left[0,237 \text{ kN} \cos 16,32^\circ + mg \cdot \frac{1}{\sqrt{2}} \right]$$

$$T \approx 0,1177 \text{ kN} + 0,366 \text{ mg}$$

$$4. \quad d_n = \frac{mg}{k} (\sin \theta + \mu_s \cos \theta)$$

$$\mu_k = \frac{k d}{2mg \cos \theta} - \tan \theta$$

$$5. \quad b) \quad v \approx 13,5 \text{ cm/s}$$

$$c) \quad \mu = 0,93$$

$$6. \quad \text{andelen som frilämnas} \quad \frac{\Delta T}{T_i} = \frac{M}{m+M}$$

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$$1) \quad \text{numeriska värdet} \quad 144 \text{ N}$$

$$2. \quad \text{Reaktionskraften är} \quad 2,67 \text{ W}$$

$$3. \quad \mu_s = \frac{2 \sin \theta \sqrt{4 + \sin^2 \theta} + \cos^2 \theta}{2 \cos \theta \sqrt{4 + \sin^2 \theta} - \sin \theta \cos \theta}$$

$$\theta = 25^\circ \rightarrow \mu_s = 0,77$$

$$4. \quad v_f = \left(1 + \frac{m_2}{m} \right) v_2$$

$$v_i = \frac{m_1}{m} v_1 + \left(1 + \frac{m_2}{m} \right) v_2$$

$$5. \quad a) \quad x = v_0 \sqrt{\frac{m}{k}}$$

$$b) \quad v_T = \sqrt{v_0^2 - 4gR - \frac{2\pi R F}{m}}$$

$$c) \quad \text{villkor} \quad v_T^2 \geq Rg$$

$$6. \quad \text{Farten är} \quad 4,7 \text{ m/s}$$