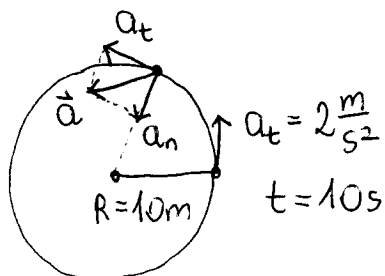


7.)



- (i) $v_k = ?$ (ii) $a = ?$ (iii) $\omega = ?$
 (iv) $\beta = ?$ (v) $s = ?$ (vi) $a_t(t) = a_n(t)$
 $t = ?$

$$v_k = v = \omega R$$

$$a_n = a_{cp} = \frac{v^2}{R}$$

$$\Phi = \frac{\beta}{2} t^2 + \omega_0 t + \Phi_0$$

$$s = \Phi R$$

$$v = \omega R$$

$$a_t = \beta R$$

$$v = a_t \cdot t$$

$$a = \sqrt{a_t^2 + a_n^2}$$

(i) $v = a_t \cdot t = \left(2 \frac{\text{m}}{\text{s}^2}\right)(10\text{s}) = \underline{20 \frac{\text{m}}{\text{s}}}$

(ii) $a_n = \frac{v^2}{R} = \frac{(20 \frac{\text{m}}{\text{s}})^2}{10\text{m}} = 40 \frac{\text{m}}{\text{s}^2}$ $a = \sqrt{a_t^2 + a_n^2} = \sqrt{4 \frac{\text{m}^2}{\text{s}^2} + 1600 \frac{\text{m}^2}{\text{s}^2}} = \underline{40,05 \frac{\text{m}}{\text{s}^2}}$

(iii) $\omega = \frac{v}{R} = \frac{20 \frac{\text{m}}{\text{s}}}{10\text{m}} = \underline{2 \frac{\text{rad}}{\text{s}} \left(\frac{1}{\text{s}}\right)}$

(iv) $\beta = \frac{a_t}{R} = \frac{2 \frac{\text{m}}{\text{s}^2}}{10\text{m}} = \underline{0,2 \frac{\text{rad}}{\text{s}^2} \left(\frac{1}{\text{s}^2}\right)}$

(v) $s = \Phi \cdot R = \frac{\beta}{2} t^2 \cdot R = 0,1 \frac{1}{\text{s}^2} \cdot (10\text{s})^2 \cdot 10\text{m} = \underline{100\text{m}}$

(vi) $a_t = a_n = \frac{v^2}{R} = \frac{(a_t \cdot t)^2}{R}$

$$2 \frac{\text{m}}{\text{s}^2} = \frac{\left(2 \frac{\text{m}}{\text{s}^2} \cdot t\right)^2}{10\text{m}}$$

$$20 = 4 t^2$$

$$t = \sqrt{5} \text{s} = \underline{2,236\text{s}}$$