

**0.0.1 51. Hausaufgabe****Blatt**

$$l = 1,09\text{m}; \alpha_{\max} = 4,0^\circ;$$

$$\mathbf{a)} \quad T = 2\pi\sqrt{\frac{l}{g}} = \dots = 2,1\text{s};$$

$$A = l\alpha_{\max} = \dots = 7,6\text{cm};$$

$$\mathbf{b)} \quad v_{\max} = A\omega = A\frac{2\pi}{T} = 0,23\frac{\text{m}}{\text{s}};$$

$$\mathbf{c)} \quad \alpha = 2,0^\circ;$$

$$y = l\alpha = A \cdot \sin \omega t = l\alpha_{\max} \sin\left[\frac{2\pi}{T}t\right]; \Rightarrow \frac{\alpha}{\alpha_{\max}} = \sin\left[\frac{2\pi}{T}t\right];$$

$$\Rightarrow \arcsin\left[\frac{\alpha}{\alpha_{\max}}\right] = \frac{2\pi}{T}t; \Rightarrow t = \frac{T}{2\pi} \arcsin\left[\frac{\alpha}{\alpha_{\max}}\right] = \dots = 0,18\text{s};$$

$$\mathbf{d)} \quad v(t) = A\omega \cdot \cos \omega t;$$

$$v(0,18\text{s}) = \dots = 0,20\frac{\text{m}}{\text{s}};$$