1. $l = 90\ cm$
$\vartheta_0 = 5^\circ$
$t = 5\ min$
$\vartheta = 0{,}5^\circ$

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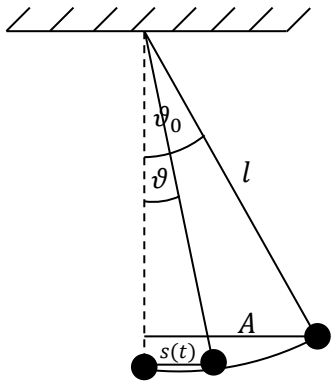
a)



$A = sin\vartheta_0 \cdot l$
$A = \sin 5^\circ \cdot 0{,}9$
$A = 0{,}0784\ m$

$s(t) = sin\vartheta \cdot l$
$s(t) = \sin 0{,}5^\circ \cdot 0{,}9$
$s(t) = 7{,}854 \cdot 10^{-3}\ m$

$$s(t) = A \cdot e^{-\delta t} \cdot \sin(\omega t + \varphi_0)$$

$$\omega = \frac{2\pi}{T} \qquad T = 2\pi\sqrt{\frac{g}{l}}$$

$$\omega = \sqrt{\frac{l}{g}}$$

$$s(t) = A \cdot e^{-\delta t} \cdot \sin\left(\sqrt{\frac{l}{g}} \cdot t\right)$$

$$7{,}854 \cdot 10^{-3} = 0{,}0784 \cdot e^{-\delta \cdot 300} \cdot \sin\left(\sqrt{\frac{0{,}9}{9{,}81}} \cdot 300\right)$$

$$0{,}10019 = e^{-\delta \cdot 300} \ / \ ln$$

$$-2{,}300686 = -\delta \cdot 300$$

$$\delta = 7{,}669 \cdot 10^{-3}$$

b)

$$T = 2\pi\sqrt{\frac{g}{l}}$$

$$N = \frac{t}{T} = \frac{300}{2\pi\sqrt{\frac{9{,}81}{0{,}9}}} = 157\ titraja$$