Latool fFK5 2

1. a lift = 0 m/s² → T = 2s,
a lift = 30 m/s² → T = ?

g = 10 m/s²

$\frac{T}{T'} = \frac{2\pi\sqrt{\frac{k}{g}}}{2\pi\sqrt{\frac{k}{g+a}}} \Leftrightarrow \frac{T}{T'} = \sqrt{\frac{g+a}{g}} = \sqrt{\frac{40}{10}} = 2$

$\frac{T}{T'} = 2 \Leftrightarrow \frac{2}{T'} = 2$

$T' = 1s$

2. m = 0,5 kg, x = 20 cm = 0,2 m ke kanan
T = 0,8 s

a. x ketika v = 1 m/s

$v = \pm\sqrt{\frac{k}{m}}\sqrt{A^2 - x^2}$

$v = \pm\frac{2\pi}{T}\sqrt{A^2 - x^2}$

$1 = \pm\frac{2\pi}{0,8}\sqrt{0,2^2 - x^2}$

$\frac{0,8}{2\pi} = \pm\sqrt{0,2^2 - x^2}$

$\frac{0,16}{\pi^2} = 0,2^2 - x^2$

$x^2 = 0,04 - \frac{0,16}{\pi^2}$

$x = \pm\sqrt{0,04 - \frac{0,16}{\pi^2}}$

$x \approx \pm 0,154$ m

$x \approx \pm 15,4$ cm

b. $k = ?$

$$T = 2\pi\sqrt{\frac{m}{k}}$$

$$0{,}8 = 2\pi\sqrt{\frac{0{,}5}{k}}$$

$$\left(\frac{0{,}8}{2\pi}\right)^2 = \frac{0{,}5}{k}$$

$$k = 0{,}5 \cdot \frac{4\pi^2}{0{,}16}$$

$$K \approx 123{,}37 \text{ N/m}$$

3. $x = 20\text{ cm} = 0{,}2\text{ m}$ ke kanan $(t=0)$

$t = 10\text{ s} \rightarrow 15$ osilasi

A. $T = ?$ $\quad T = \frac{10}{15} = \frac{2}{3} = 0{,}67\text{ s}$

B. $V_{max} = ?$

$$V_{Max} = \omega A$$

$$= \frac{2\pi}{T} A = \frac{2\pi \cdot 3}{2} \cdot 0{,}2$$

$$= \frac{2\pi \cdot 3}{10} \cdot 0{,}2 = 0{,}6\pi \approx 1{,}88\text{ m/s}$$