

Jawaban

$$1) a) = \frac{F}{A}$$

$$= \frac{0,2 \cdot 10 \text{ N}}{5 \cdot 10^{-9} \text{ m}^2}$$

$$= 0,4 \cdot 10^9 \text{ N/m}^2$$

$$= 4 \cdot 10^8 \text{ Pa}$$

$$b) e = \frac{\Delta l}{l_0}$$

$$= \frac{15}{50} = \frac{3}{10} = 0,3$$

$$c) E = \frac{b}{e}$$

$$= \frac{4 \cdot 10^8}{0,3}$$

$$= \frac{4}{3} \cdot 10^9 \text{ N/m}^2$$

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Diketahui

$$d = 10 \text{ m}$$

$$l_0 = 2,5 \text{ m}$$

$$l_i = 2,7 \text{ m}$$

$$= 4 \cdot 10^3 \text{ N/m}^2$$

$$g = 10 \text{ m/s}^2$$

Ditanya = m.....?

$$Y = \frac{F \times L_0}{A \times \Delta L}$$

$$\begin{aligned} \Delta L &= l_i - l_0 \\ &= 2,7 - 2,5 \\ &= 0,2 \text{ m} \end{aligned}$$

$$A = \frac{\pi d^2}{4} \cdot 10^2$$

$$= \frac{1}{4} \pi \cdot 10^2$$

$$\begin{aligned} &= 2,5 \pi = 72,5392 \\ &= 72,540 \text{ cm}^2 \end{aligned}$$

$$Y = \frac{F \times l_0}{A \times \Delta L}$$

$$F = \frac{Y \times A \times \Delta L}{l_0} = \frac{4 \cdot 10^3 \times 72,54 \cdot 10^{-4}}{2,5}$$

$$= 2,513 \text{ N}$$

$$F = m \cdot g$$

$$m = \frac{F}{g} = \frac{2,5 \cdot 10^3}{10} = 0,25 \text{ kg}$$

3 Diketahui

$$h_1 = 100 \text{ N/m}$$

$$h_2 = 150 \text{ N/m}$$

$$h_3 = 300 \text{ N/m}$$

$$\Delta x = 20 \text{ cm} = 0,2 \text{ m}$$

Ditanya = m = ?

Diketahui ke Pengganti Seri

$$\frac{1}{h_s} = \frac{1}{h_1} + \frac{1}{h_2} + \frac{1}{h_3}$$

$$\frac{1}{h_s} = \frac{1}{100} + \frac{1}{150} + \frac{1}{300}$$

$$\frac{1}{h_s} = \frac{6}{300}$$

$$h_s = \frac{300}{6} = 50 \text{ N/m}$$

$$F = h \cdot \Delta x$$

$$F = 50 \cdot 0,2 = 10 \text{ N}$$

$$F = m \cdot g$$

$$m = \frac{F}{g} = \frac{10}{10} = 1$$

4 Diketahui

$$k_1 = k_2 = k_3 = 300 \text{ N/m}$$

$$m = 6 \text{ kg}$$

$$\text{Ditanya } \Delta x = \dots ?$$

$$EP = \dots ?$$

~~k<sub>1</sub>~~ k<sub>1</sub> dan k<sub>2</sub> → susunan paralel

$$k_p = k_1 + k_2$$

$$k_p = 300 + 300$$

$$k_p = 600 \text{ N/m}$$

k<sub>p</sub> dan k<sub>3</sub> → susunan seri

$$\frac{1}{k_s} = \frac{1}{k_p} + \frac{1}{k_3}$$

$$\frac{1}{k_s} = \frac{1}{600} + \frac{1}{300}$$

$$\frac{1}{k_s} = \frac{1+2}{600}$$

$$\frac{1}{k_s} = \frac{3}{600}$$

$$k_s = k_{\text{total}} = \frac{600}{3}$$

$$k_{\text{total}} = 200 \text{ N/m}$$

$$F = m \cdot g$$

$$F = 6 \cdot 10$$

$$F = 60 \text{ N}$$

Pertambahan Panjang Pegas

$$F = k \cdot \Delta x$$

$$\Delta x = \frac{F}{k}$$

$$\Delta x = \frac{60}{200}$$

$$\Delta x = 0,3 \text{ m}$$

Energi Potensial

$$EP = \frac{1}{2} F \Delta x$$

$$EP = \frac{1}{2} \cdot 60 \cdot 0,3$$

$$EP = 30 \cdot 0,3$$

$$EP = 9 \text{ Joule}$$

↳ Diketahui

$$l_x = 1 \text{ m}$$

$$l_y = 2 \text{ m}$$

$$F_x = F_y = F$$

$$\Delta l_x = 0,5 \text{ mm}$$

$$\Delta l_y = 1 \text{ mm}$$

$$dy = 2 dx$$

$$dx = dx$$

$$y_x : y_y = \dots ?$$

Jawab

$$y_x : y_y$$

$$\frac{F_x \cdot l_x}{\Delta x \Delta l_x} : \frac{F_y \cdot l_y}{\Delta y \Delta l_y}$$

$$= \frac{l_x}{\Delta x \Delta l_x} : \frac{l_y}{\Delta y \Delta l_y}$$

$$= \frac{1}{dx^2 \cdot 0,5} : \frac{2}{(2dx) \cdot 21}$$

$$= \frac{1}{dx^2 \cdot \frac{1}{2}} : \frac{2}{(4dx)^2 \cdot 21}$$

$$= \frac{1}{4 \cdot \frac{1}{2}} : \frac{2 \cdot \frac{1}{2}}{4 \cdot 1}$$

$$= 4 : 1$$