

Exercice 5A

(1) $l = 20 \text{ m}$

$x = 1,6 \text{ cm} = 0,016 \text{ m}$

$m = 25000 \text{ kg}$

$\therefore T = \frac{\lambda x}{l}$

$\therefore 25000(10) = \frac{\lambda 0,016}{20}$

$\therefore \lambda = 3,125 \times 10^8 \text{ N}$

(3) $\lambda = 50000 \text{ N}$

(a) 

$T = \frac{\lambda x}{l} \Rightarrow 8(120) = \frac{50000 x}{10}$

$\therefore x = 0,192 \text{ m}$

$$3(b) \quad \lambda = 80000, \quad l = 2m, \quad T = 120N$$



$$T = \frac{\lambda x}{l} \Rightarrow x = T \frac{l}{\lambda} \Rightarrow x_k = k \cdot T \cdot l / \lambda$$

Interval (k)	1	2	3	4	5	6	7
kT	120	240	360	480	600	720	840
x_k	0,0048	0,0094	0,0144	0,0192	0,024	0,0288	0,0336

$$\therefore x_{Tot} = 2 [28(0,0048)] + 0,192$$

$$\therefore x_{Tot} = 0,461 m$$

$$(5) \quad F = kx$$

$$\therefore 75(10) = 15(k) 0,005$$

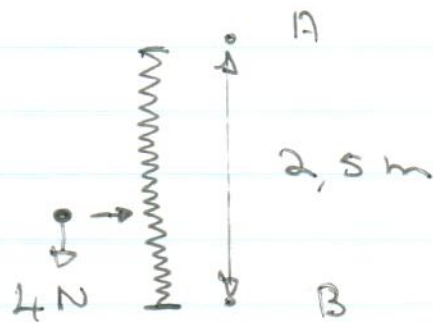
$$\therefore k = 10000 \text{ N/m}$$

$$F = kx = 10000(0,01) = 100 \text{ N}$$

$$(13) \quad F = \frac{\lambda}{l} x$$

$$20 = \frac{\lambda}{2} 0,5$$

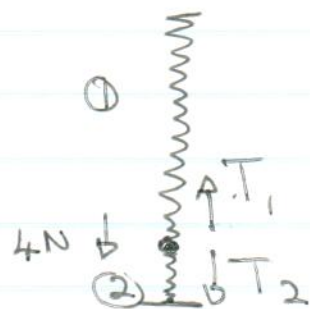
$$\therefore \lambda = 80 \text{ N}$$



$$\text{Spring 1: } l_1 = \frac{1,5}{2,5} \cdot 2,0$$

$$\therefore l_1 = 1,2 \text{ m}$$

$$\text{Spring 2: } l_2 = 0,8 \text{ m}$$



$$A) \quad \sum F_y = 0: \quad T_1 - 4 + T_2 = 0$$

$$\therefore \frac{80}{1,2} x - 4 - \frac{80}{0,8} (0,5 - x) = 0$$

$$\therefore x = 0,324 \text{ m}$$

$$\therefore h = 2,5 - (1,2 + 0,324) = 0,976 \text{ m}$$