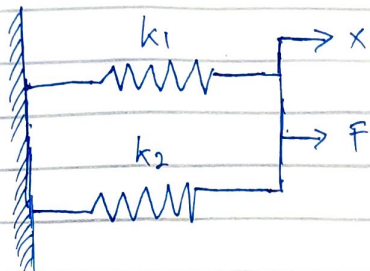
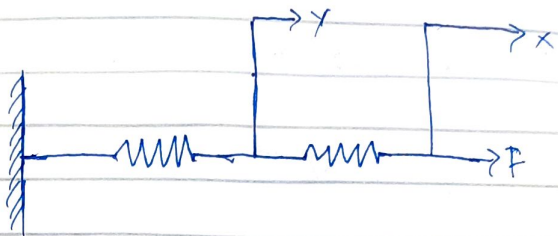


Nama = Fariz Yusran
 NIM = 03051181722009

3-1



(a)



$$k_1 x + k_2 x = F = k_{eq} x$$

or $k_{eq} = k_1 + k_2$

$$k_1 y = F, \quad k_2 (x - y) = F$$

eliminate of y dari 2 persamaan

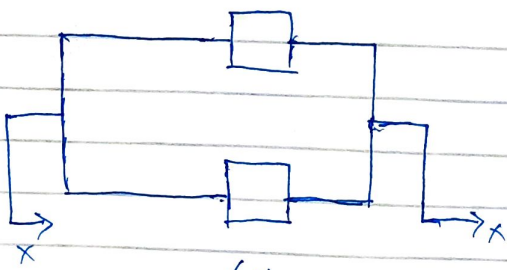
$$k_2 \left(x - \frac{F}{k_1} \right) = F$$

or

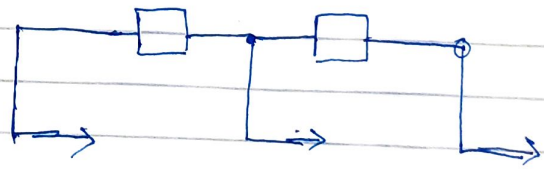
$$k_2 x = F + \frac{k_2}{k_1} F = \frac{k_1 + k_2}{k_1} F$$

$$k_{eq} = \frac{F}{x} = \frac{k_1 k_2}{k_1 + k_2} = \frac{1}{\frac{1}{k_1} + \frac{1}{k_2}}$$

-2



(a)



(b)

$$a) \quad f = b_1 (y - x) + b_2 (y - x) = (b_1 + b_2) (y - x)$$

$$f = b_{eq} (y - x)$$

$$b_{eq} = b_1 + b_2$$

$$b) f = b_1 (\bar{z} - x) = b_2 (x - \bar{z}) \quad (3-1)$$

$$(b_1 + b_2)\bar{z} = b_2 y + b_1 x$$

$$\bar{z} = \frac{1}{b_1 + b_2} (b_2 y + b_1 x) \quad (3-2)$$

$$f = b_{eq} (y - x)$$

Subs persamaan (3-2) ke (3-1)

$$f = b_2 (y - \bar{z}) = b_2 \left[y - \frac{1}{b_1 + b_2} (b_2 y + b_1 x) \right]$$

$$= \frac{b_1 b_2}{b_1 + b_2} (y - x)$$

Jadi

$$f = b_{eq} (y - x) = \frac{b_1 b_2}{b_1 + b_2} (y - x)$$

Karena

$$b_{eq} = \frac{b_1 b_2}{b_1 + b_2} = \frac{1}{\frac{1}{b_1} + \frac{1}{b_2}}$$