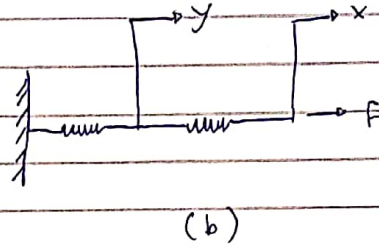
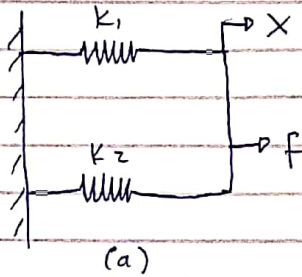


8.1



$$k_1 X + k_2 X = F = K_{eq} X$$

$$\text{or } K_{eq} = k_1 + k_2$$

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

eliminasi of y dari 2 persamaan

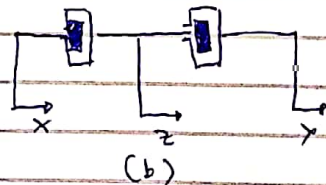
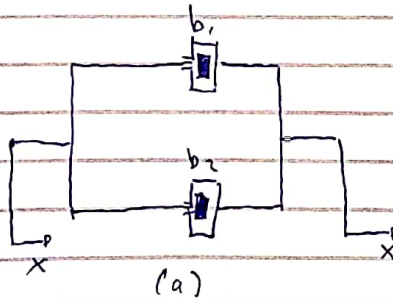
$$k_2 \left( x - \frac{F}{k_1} \right) = F$$

or

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

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

3.2



$$a) \quad f = b_1 (\dot{x} - \dot{x}') + b_2 (\dot{x} - \dot{x}') = (b_1 + b_2)(\dot{y} - \dot{x})$$

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

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

$$b) \quad f = b_1 (\dot{z} - \dot{x}) = b_2 (\dot{x} - \dot{z})$$

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

$$\dot{z} = \frac{1}{b_1 + b_2} (b_2 \dot{y} + b_1 \dot{x})$$

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

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

$$f = b_2 (j - i) = b_2 \left[ y - \frac{1}{b_1 + b_2} (b_2 j + b_1 i) \right]$$

$$= \frac{b_1 b_2}{b_1 + b_2} (j - i)$$

$$f = b_{eq} (j - i) = \frac{b_1 b_2}{b_1 + b_2} (j - i)$$

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

