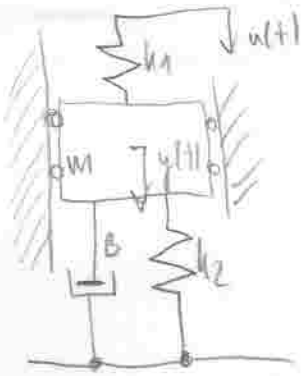

$\tau = \frac{B}{k}$ [s]

$\mathcal{L}[y(t)] = Y(s)$

$\mathcal{L}[u(t)] = U(s)$

$G(s) = \frac{Y(s)}{U(s)}$

WP=0

$$0 = m \cdot \frac{d^2y(t)}{dt^2} + k_2 \cdot y(t) + B \cdot \frac{dy(t)}{dt} + k_1 \cdot [y(t) - u(t)]$$

$$0 = m \cdot s^2 \cdot Y(s) + k_2 \cdot Y(s) + B \cdot s \cdot Y(s) + k_1 \cdot Y(s) - k_1 \cdot U(s)$$

$$k_1 \cdot U(s) = Y(s) \cdot [m \cdot s^2 + k_2 + B \cdot s + k_1]$$

$k = \left[\frac{k_g}{s^2}\right]$

$B = \left[\frac{k_g}{s}\right]$

$$\frac{Y(s)}{U(s)} = \frac{k_1}{m \cdot s^2 + k_2 + B \cdot s + k_1}$$

$$G(s) = \frac{k_1}{m \cdot s^2 + k_2 + B \cdot s + k_1} \cdot \frac{\frac{1}{k_1}}{\frac{1}{k_1}}$$

$\frac{B}{k_1} = \tau$

$$G(s) = \frac{1}{\frac{m \cdot s^2}{k_1} + \frac{k_2}{k_1} + \tau \cdot s + 1}$$

$\frac{k_1}{k_1} = 1$

$$G(s) = \frac{1}{\frac{m \cdot s^2}{B} + \frac{k_2 + k_1}{k_1} + \tau_2 \cdot s}$$