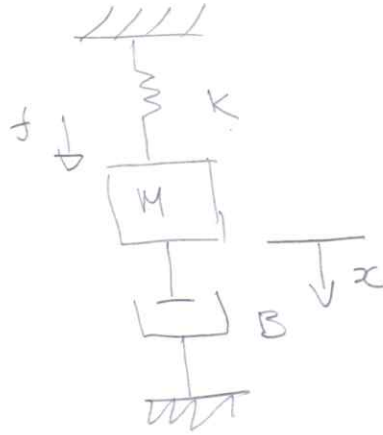


2)

a)



$$\boxed{FR = ma}$$

$$M \ddot{x} = f(t) - Kx - B\dot{x}$$

$$s^2 M X(s) = F(s) - K X(s) - s B X(s)$$

$$(s^2 M + K + s B) X(s) = F(s)$$

$$\therefore \frac{X(s)}{F(s)} = \frac{1}{s^2 M + s B + K}$$

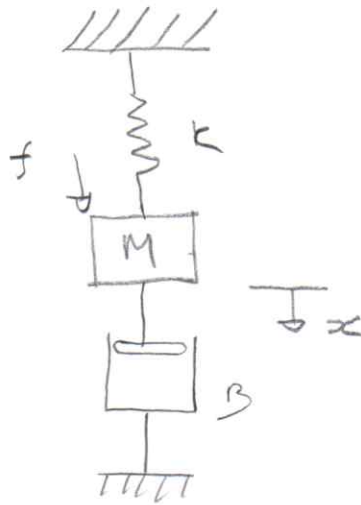
$$\text{canonical form} = \frac{\frac{1}{M}}{s^2 + s \frac{B}{M} + \frac{K}{M}} \Rightarrow G = \frac{1}{K}$$

$$= \frac{1}{K} \cdot \frac{\frac{K}{M}}{s^2 + s \frac{B}{M} + \frac{K}{M}} \begin{cases} \omega_n^2 = \frac{K}{M} \\ 2\zeta\omega_n = \frac{B}{M} \end{cases}$$

$$\text{if } R(s) = \frac{1}{s} \text{ \& } k = \phi$$

$$\Rightarrow \boxed{\frac{1}{K}} \rightarrow \text{stability.}$$

2a)



"Primeiro
teste
até
esta
maneira."

input f
output x
 $\frac{x}{f} =$

$$\sum F_R = m \cdot \ddot{x}(t)$$

tempus

$$f(t) - k x(t) - B \dot{x}(t) = m \ddot{x}(t)$$

Frequência $s = \sigma + j\omega$

$$F(s) - k X(s) - B s X(s) = m s^2 X(s)$$

$$F(s) = m s^2 X(s) + k X(s) + B s X(s)$$

$$\frac{F(s)}{X(s)} = m s^2 + k + B s$$

$$\frac{X(s)}{F(s)} = \frac{1}{m s^2 + k + B s}$$