七1408 2181 蘇品瑄

電工小考

(1) $k x_o + B \frac{dx_o}{dt} = M \frac{d^2 x_m}{dt^2} = M\left(\frac{d^2 x_i}{dt^2} - \frac{d^2 x_o}{dt^2}\right)$

(2) $\begin{cases} X_i(jw) = |X_i| e^{j(\phi_i + wt)} \\ X_o(jw) = |X_o| e^{j(\phi_o + wt)} \end{cases}$

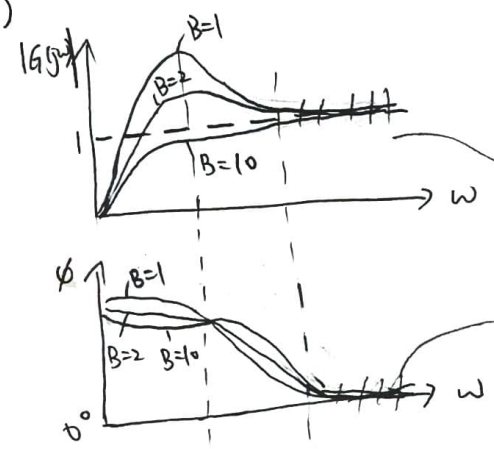
$k|X_o| e^{j(\phi_o+wt)} + B|X_o| e^{j(\phi_o+wt)}(jw) = M\left[(jw)^2 |X_i| e^{j(\phi_i+wt)} - (jw)^2 |X_o| e^{j(\phi_o+wt)}\right]$

$\Rightarrow k X_o(jw) + B(jw) X_o(jw) = M(jw)^2 [X_i(jw) - X_o(jw)]$

$\Rightarrow (-w^2 M + jwB + k) X_o(jw) = -w^2 M X_i(jw)$

$\Rightarrow G(jw) = \frac{X_o(jw)}{X_i(jw)} = \frac{-w^2 M}{-w^2 M + jwB + k}$

(3)




(4) if $G(jw) = \frac{X_o(jw)}{X_i(jw)} = 1 \Rightarrow X_o(jw) = X_i(jw)$

$= |G| e^{j\phi} \quad 0° = 1$

高頻時，$|G| = 1$，$\phi = 0°$，$G(jw)$ 才會等於 1