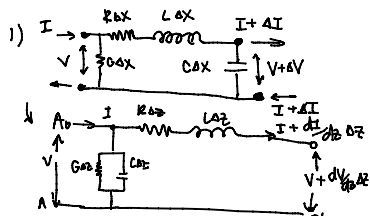


# MAE 40 Last HW

Saturday, September 3, 2022

7:50 PM

Fig. 10.19



$$V - [V + \frac{dV}{dt} \Delta Z] = (R + j\omega L) \Delta Z \cdot I$$

$$-\frac{dV}{dt} = (R + j\omega L) I \quad \text{--- ①}$$

$$-\frac{dI}{dt} = -(G + j\omega L) V \quad \text{--- ②}$$

$$-\frac{d^2V}{dt^2} = (R + j\omega L) \frac{dI}{dt} \rightarrow \frac{d^2V}{dt^2} = (R + j\omega L)(G + j\omega L)V$$

$$\frac{d^2V}{dt^2} + (R + j\omega L)(G + j\omega L)V = 0 \quad \text{--- ③}$$

$$\frac{d^2I}{dt^2} + (R + j\omega L)(G + j\omega L)I = 0 \quad \text{--- ④}$$