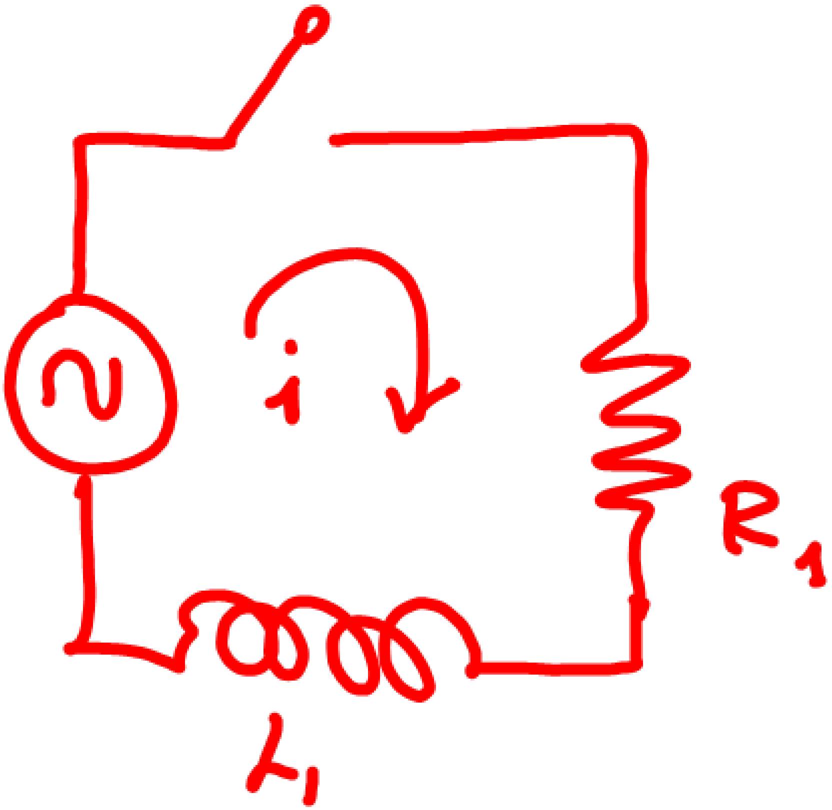

$$i(0) = 0$$

$$L_1 \frac{di}{dt} + R_1 i = 120 \sin(60(\pi t)) \cdot u(t-4)$$

$$\frac{d^3y}{dt^3} - 2\frac{d^2y}{dt^2} + 4\frac{dy}{dt} - 6y = 2\cos(3t) \qquad \begin{array}{l} y(0)=2 \\ y'(0)=-2 \\ y''(0)=4 \end{array}$$

LODE(3) cc. NH.

$$\mathcal{L}\left\{\frac{d^3y}{dt^3} - 2\frac{d^2y}{dt^2} + 4\frac{dy}{dt} - 6y\right\} = \mathcal{L}\left\{2\cos(3t)\right\}$$

$$\mathcal{L}\left\{\frac{d^3y}{dt^3}\right\} - 2\mathcal{L}\left\{\frac{d^2y}{dt^2}\right\} + 4\mathcal{L}\left\{\frac{dy}{dt}\right\} - 6\mathcal{L}\{y\} = 2\mathcal{L}\{\cos(3t)\}$$

$$\left[s^3\mathcal{L}\{y\} - s^2y(0) - sy'(0) - y''(0)\right] - 2\left[s^2\mathcal{L}\{y\} - sy(0) - y'(0)\right] +$$

$$+4\left[s\mathcal{L}\{y\} - y(0)\right] - 6\mathcal{L}\{y\} = 2\left[\frac{s}{s^2+9}\right]$$

$$\left(s^3\mathcal{L}\{y\} - 2s^2 + 2s - 4\right) - 2\left(s^2\mathcal{L}\{y\} - 2s + 2\right) + 4\left(s\mathcal{L}\{y\} - 2\right) -$$

$$-6\mathcal{L}\{y\} = \frac{2s}{s^2+9}$$

$$\left(s^3 - 2s^2 + 4s - 6\right)\mathcal{L}\{y\} - 2s^2 + (2-2)s + (-4+2-2) = \frac{2s}{s^2+9}$$

$$\left(s^3 - 2s^2 + 4s - 6\right)\mathcal{L}\{y\} = \frac{2s}{s^2+9} + 2s^2 + 4$$

$$\left(s^3 - 2s^2 + 4s - 6\right)\mathcal{L}\{y\} = \frac{2s + (2s^2+4)(s^2+9)}{s^2+9}$$

$$\boxed{\mathcal{L}\{y\} = \frac{2s + (2s^2+4)(s^2+9)}{(s^2+9)(s^3 - 2s^2 + 4s - 6)}}$$