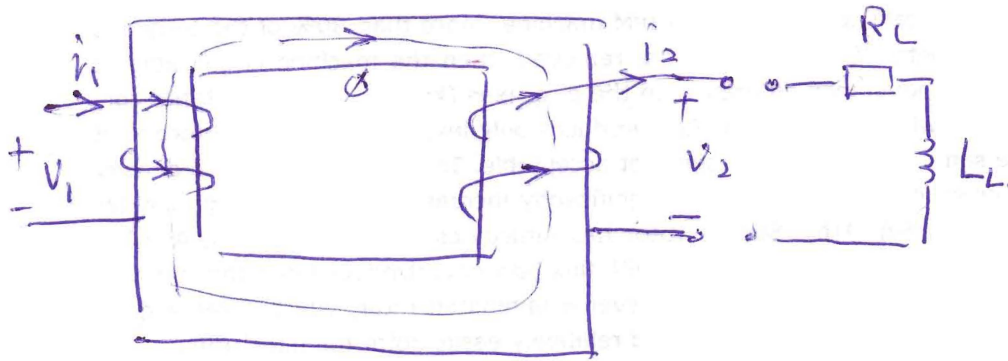The definitions

The equations

$$V_1 = R_1 i_1 + \frac{d}{dt}(L_{11}i_1 - Mi_2) = R_1 i_1 + L_{11}\frac{di_1}{dt} - M\frac{di_2}{dt}$$

$$V_2 = -R_2 i_2 + \frac{d}{dt}(-L_{22}i_2 + Mi_1) = -R_2 i_2 - L_{22}\frac{di_2}{dt} + M\frac{di_1}{dt}$$

$$V_2 = R_L i_2 + L_L\frac{di_2}{dt}$$

Let:

$$x = V_1 - R_1 i_1 = L_{11}\frac{di_1}{dt} - M\frac{di_2}{dt} \quad \cdots \cdots \; ①$$

$$y = V_2 + R_2 i_2 = -L_{22}\frac{di_2}{dt} + M\frac{di}{dt} \quad \cdots \; ②$$

x, y "known" ⟹ because they can be accessed in the simulink model !!! (You know what you have access to in the model!)

Therefore, using ① and ②, taking $\frac{di_1}{dt}, \frac{di_2}{dt}$ as unknown variables, $\frac{di_2}{dt}$ as a function of inductance and x, y. Can be obtained!

⟹ Please check the final result in the Simulink Model.