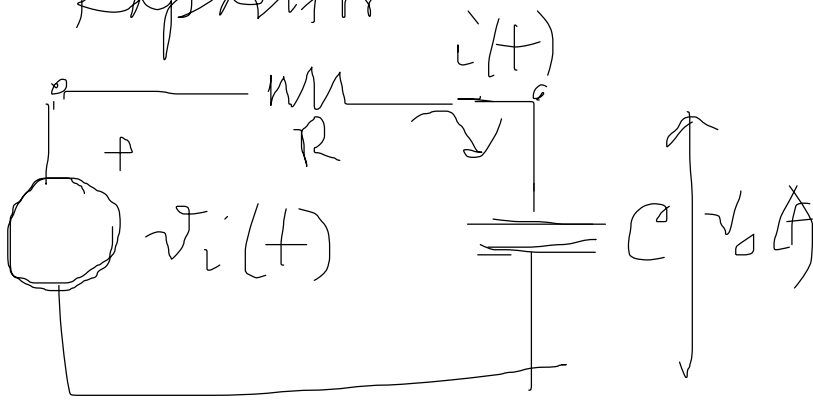
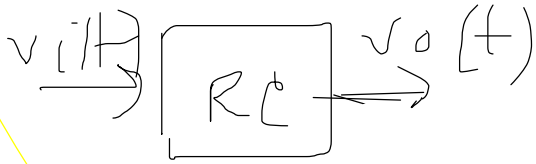
* Contoh ELEKTRIK :

Rangkaian Pemuat Kapasitor





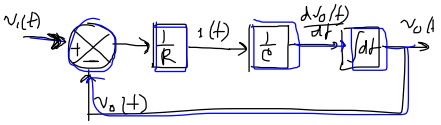
Hukum Ohm :

$$i(t) = \frac{1}{R}\left[V_i(t) - V_o(t)\right]$$

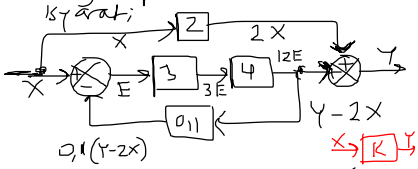
$$C\frac{dV_o(t)}{dt} = i(t)$$

persamaan diferensial

$$C\frac{dV_o(t)}{dt} = \frac{1}{R}\left[V_i(t) - V_o(t)\right]$$



* Dengan perubahan dan penggabungan isyarat :



$0{,}1(Y-2X)$

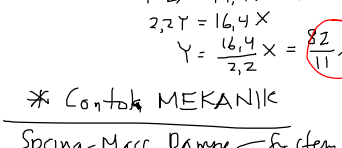
$E = X - 0{,}1(Y-2X) = X - 0{,}1Y + 0{,}2X$
$= 1{,}2X - 0{,}1Y$

$Y-2X = 12E = 12\left[1{,}2X - 0{,}1Y\right]$
$Y-2X = 14{,}4X - 1{,}2Y$
$2{,}2Y = 16{,}4X$
$Y = \frac{16{,}4}{2{,}2}X = \frac{82}{11}X$

$K = \frac{82}{11}$

* Contoh MEKANIK

Spring - Mass - Damper System



Model Matematik :

Hukum Newton

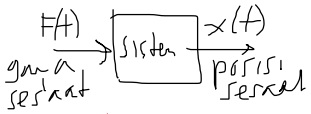
$$F(t) = M\frac{d^2x(t)}{dt^2} + B\frac{dx(t)}{dt} + Kx(t)$$

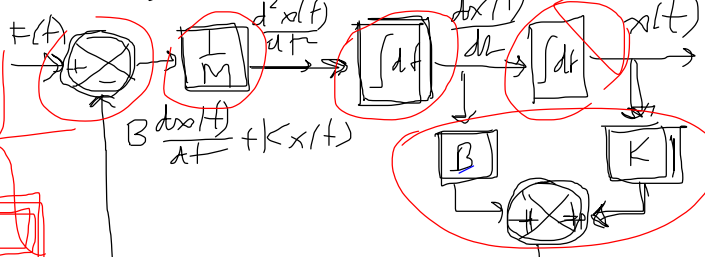
pers. diferensial

percepatan kecepatan posisi

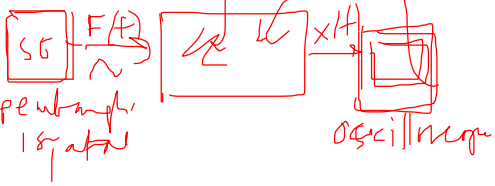
$$\frac{d^2x(t)}{dt^2} = \frac{1}{M}\left[F(t) - \left(B\frac{dx(t)}{dt} + Kx(t)\right)\right]$$

Bagan Kotak





Rangkaian Elektron



NEXT : Macam-macam SISTEM