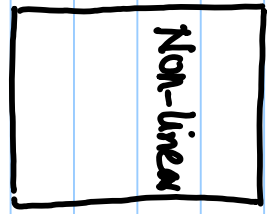


# Lecture # 4



⇒



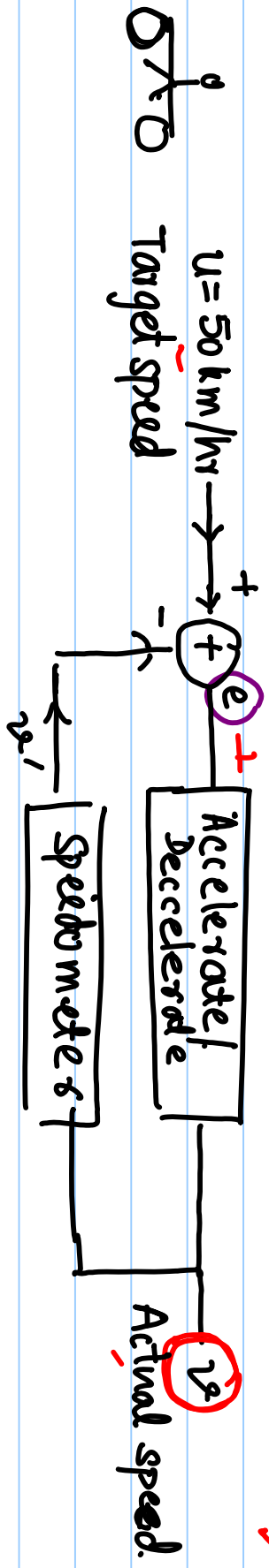
— gm : transconductance

— gm isn't fixed. gm can vary based on Process,

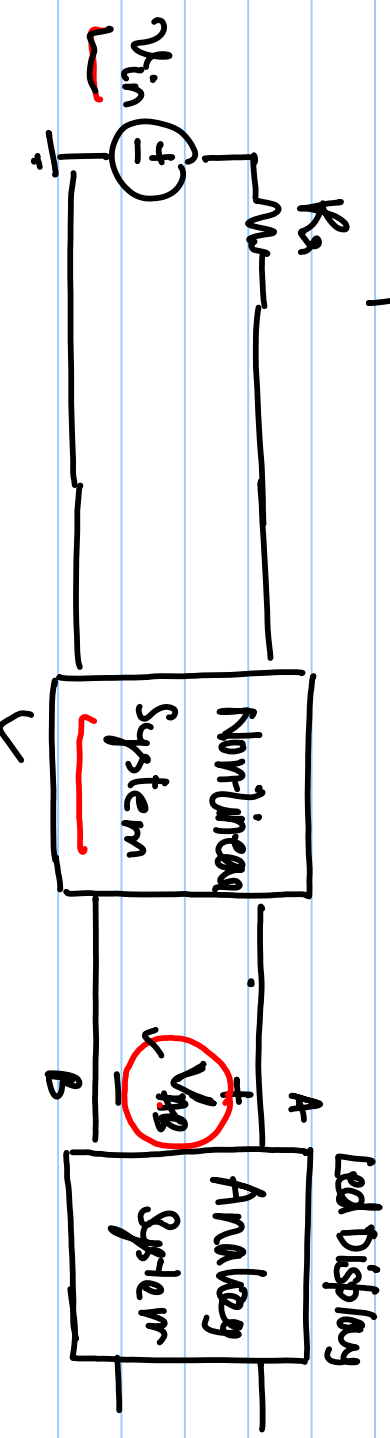
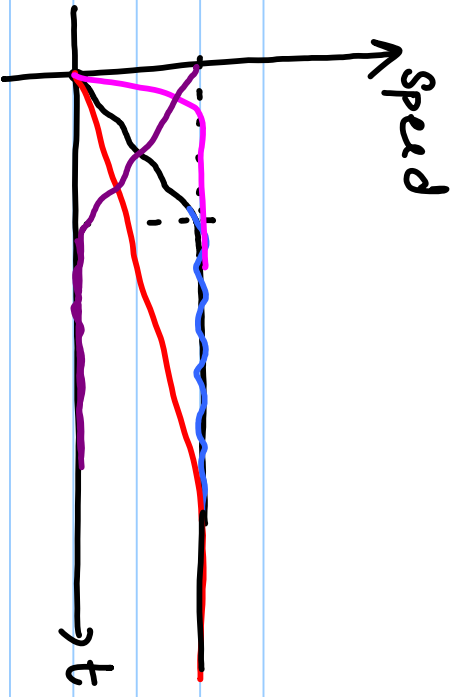
voltage, temperature (PVT) in which the system operates

Eg: 'A' riding on a motorbike

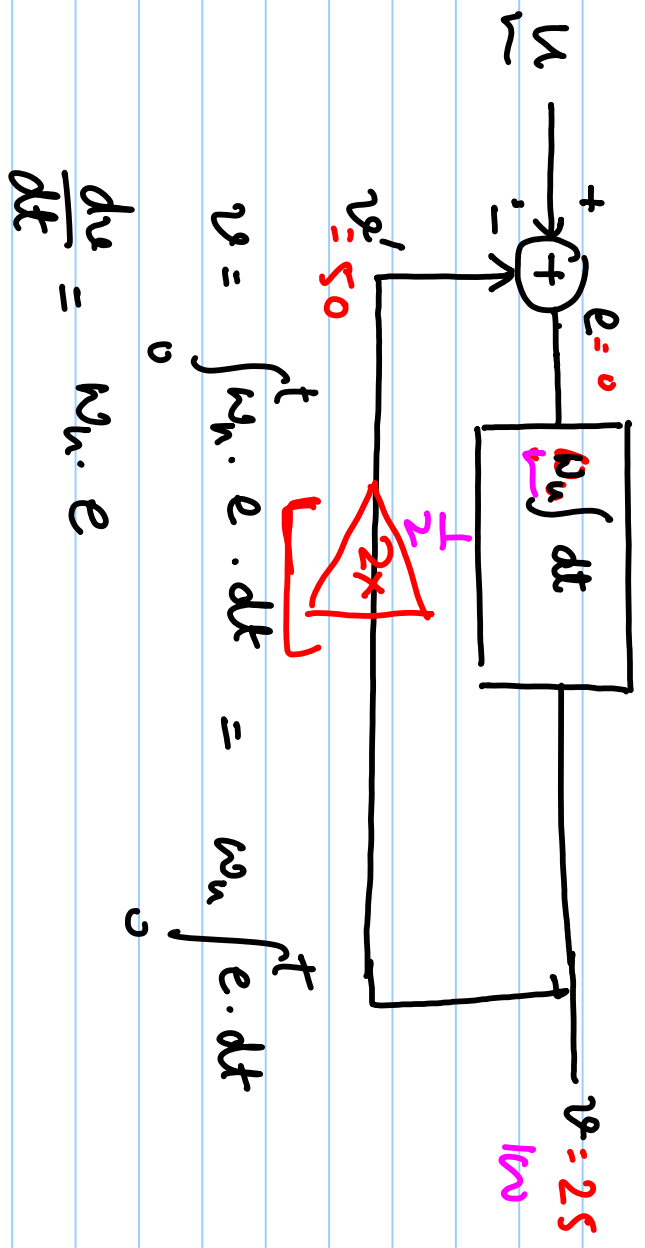
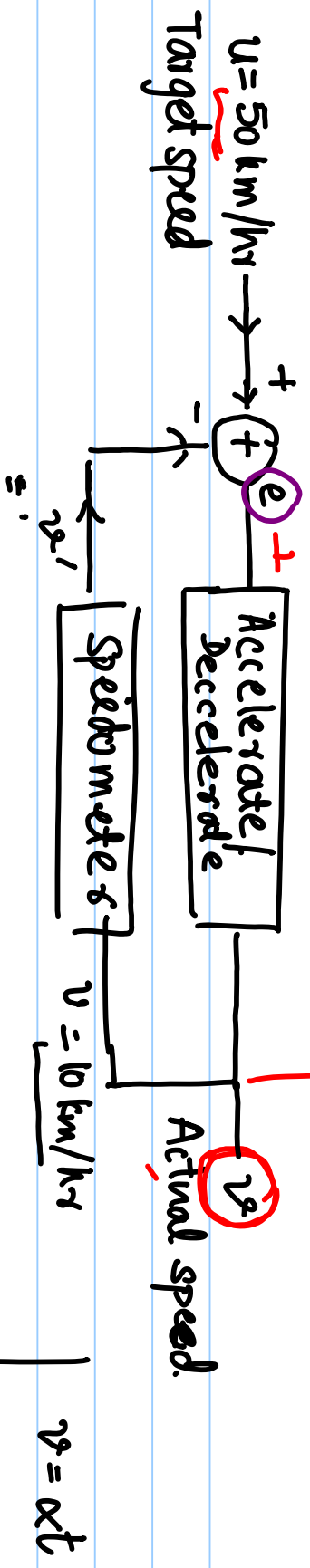
$$v = 50 \text{ km/hr}$$



$$v = \alpha t$$

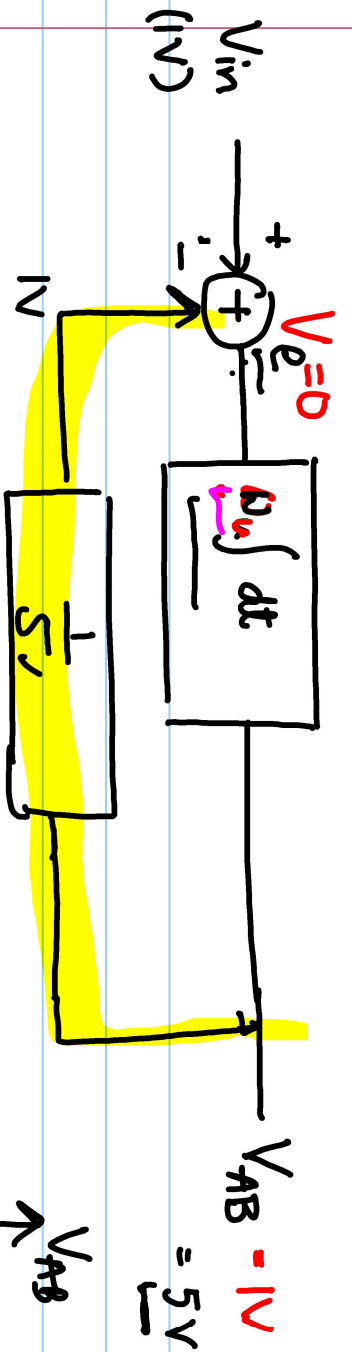


Speed Detector



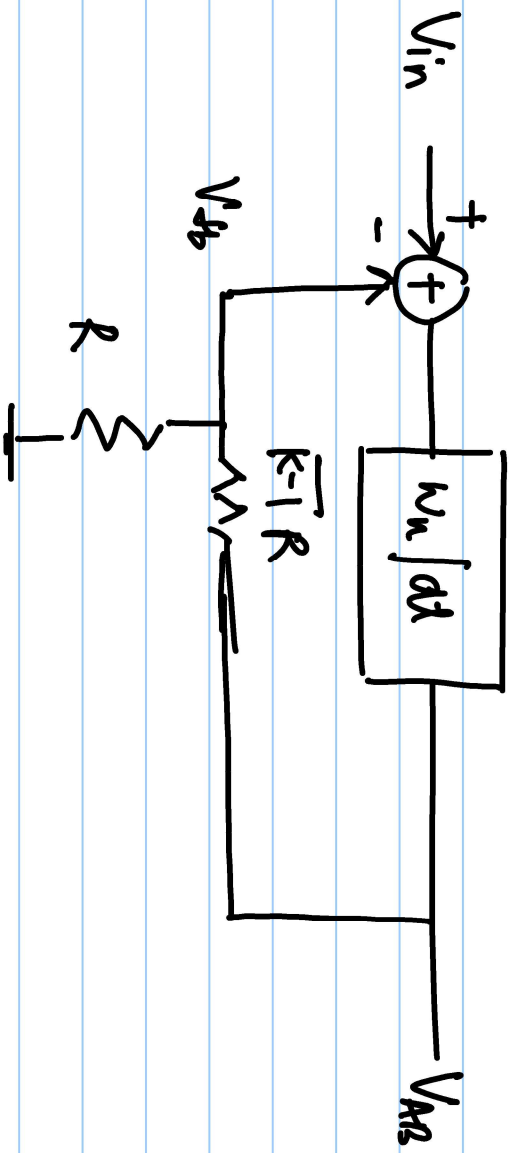
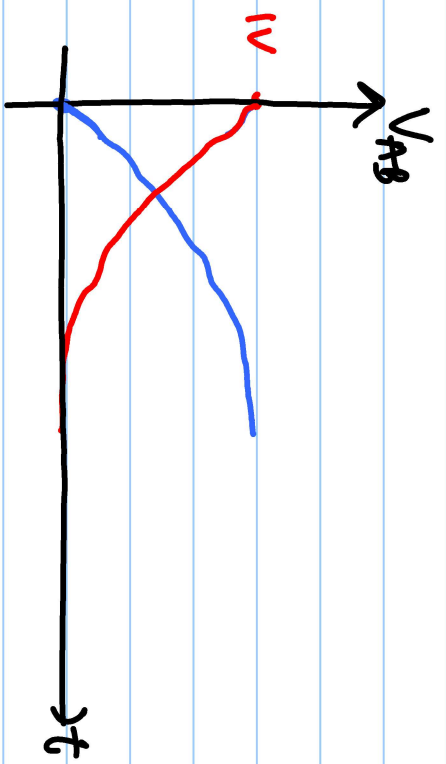
$$v = \int_0^t \omega_n \cdot e \cdot dt = \omega_n \int_0^t e \cdot dt$$

$$\frac{dv}{dt} = \omega_n \cdot e$$



at  $t=0$ ,  $V_{AB}=0$ ,  $V_{in} = 1V$

$$V_{AB} = k_u \int_0^t V_e \cdot dt$$



$$V_{AB} = \frac{1}{k \cdot R} \cdot V_{AB} = \frac{V_{AB}}{k}$$