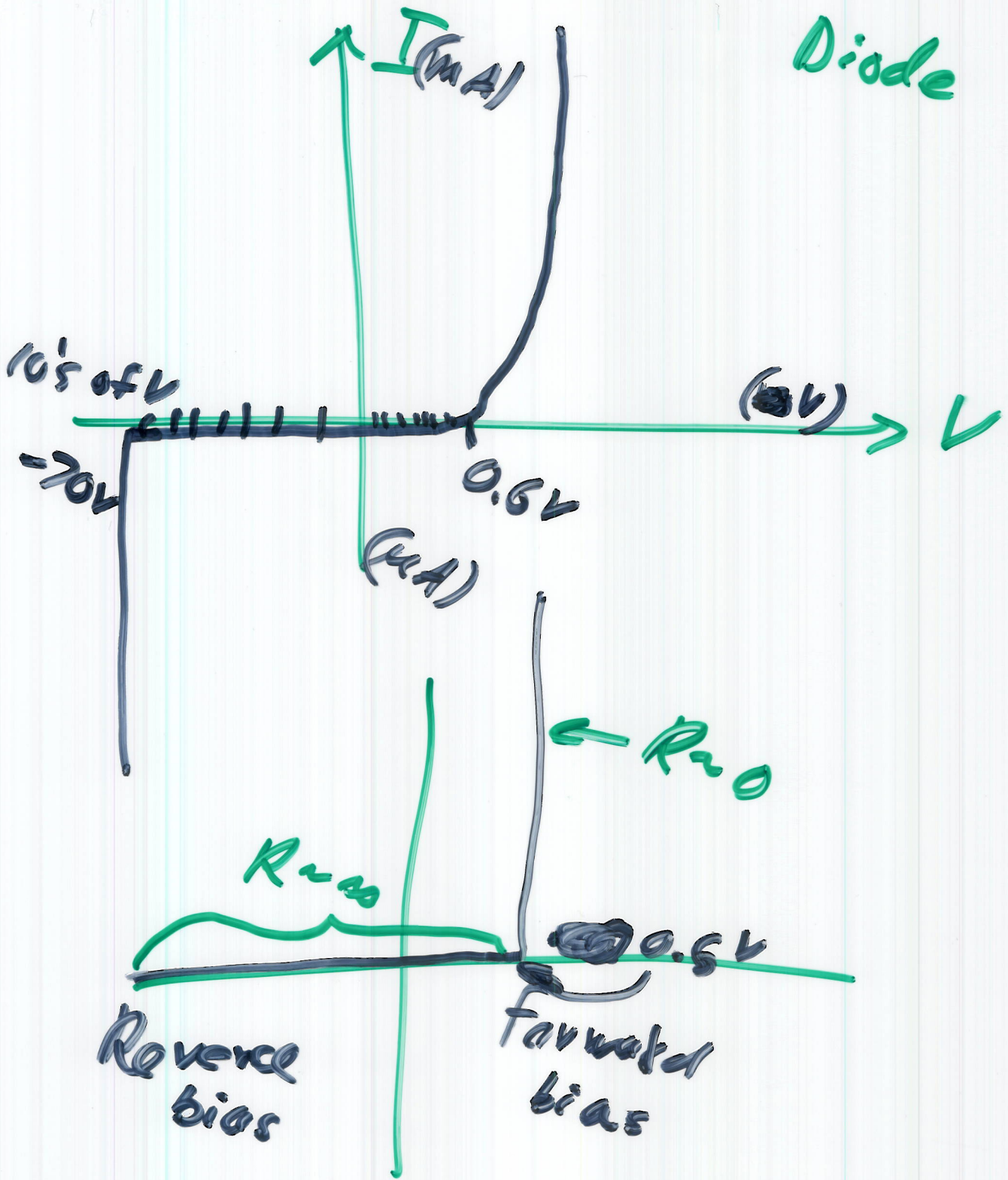
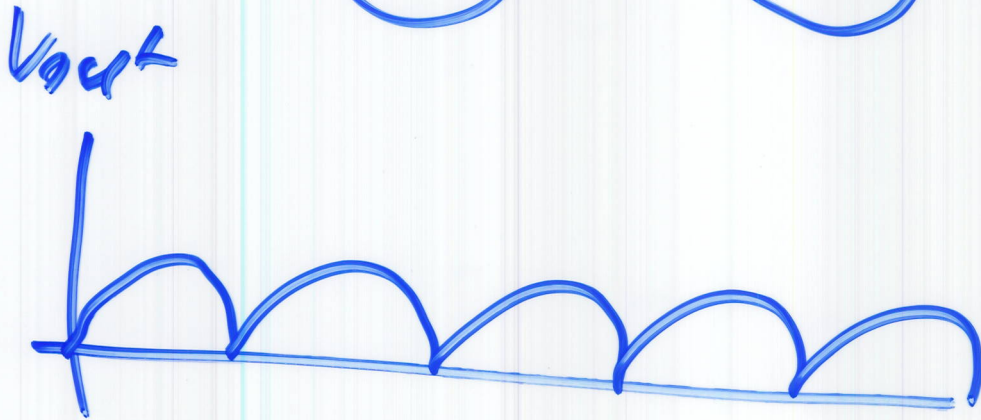
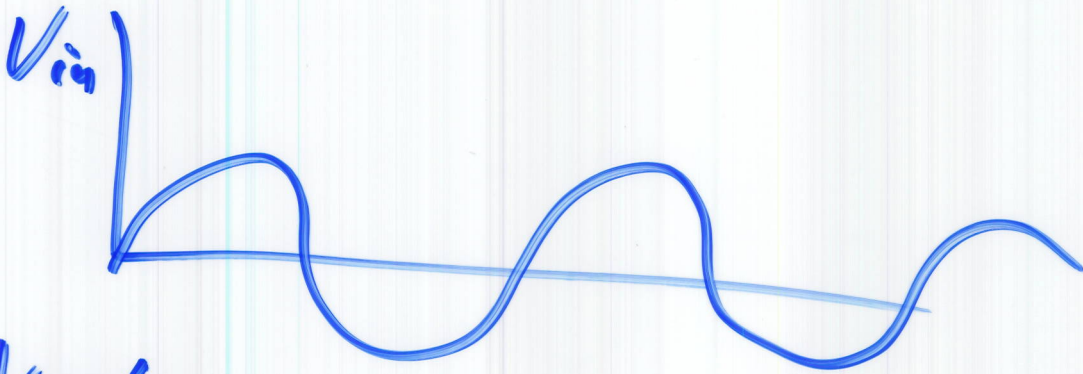
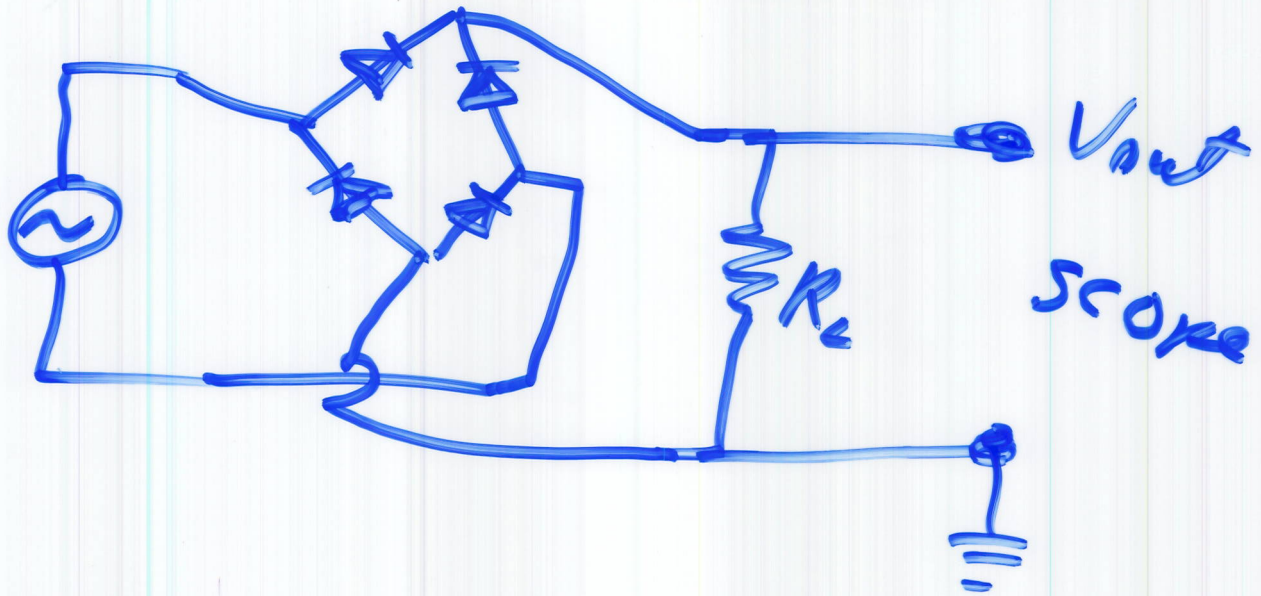


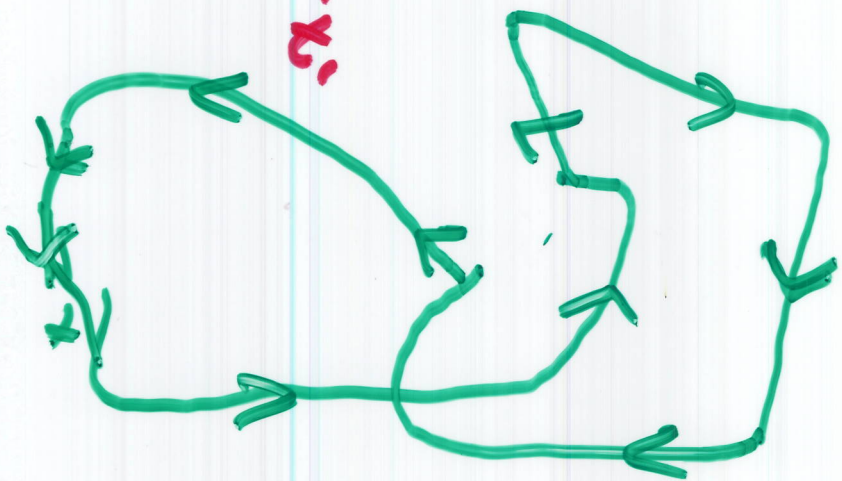
# Diode



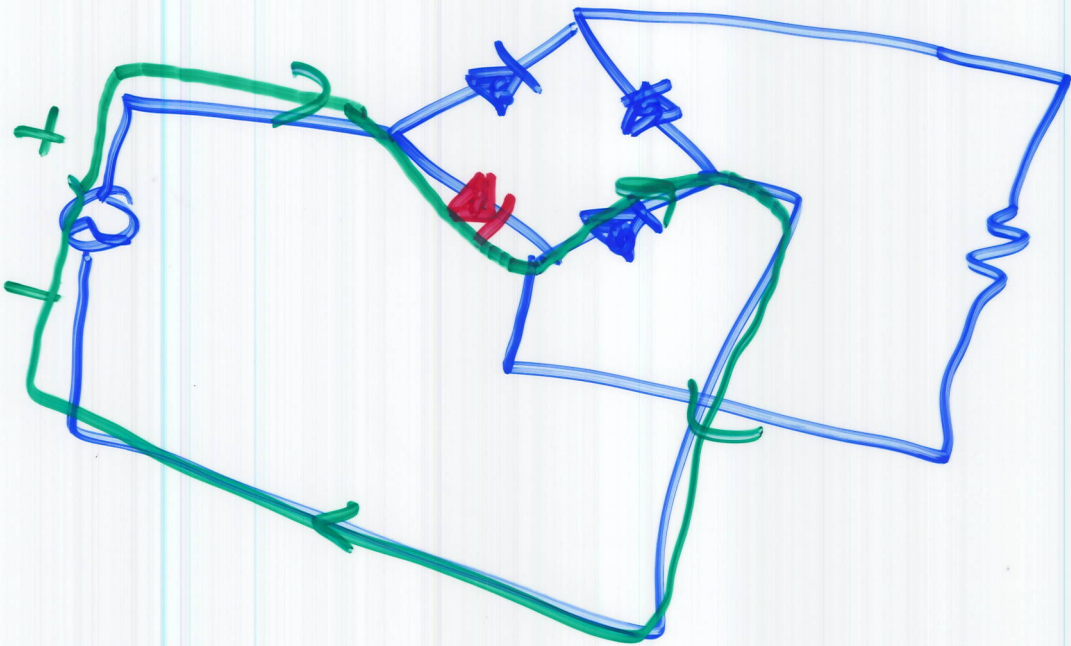
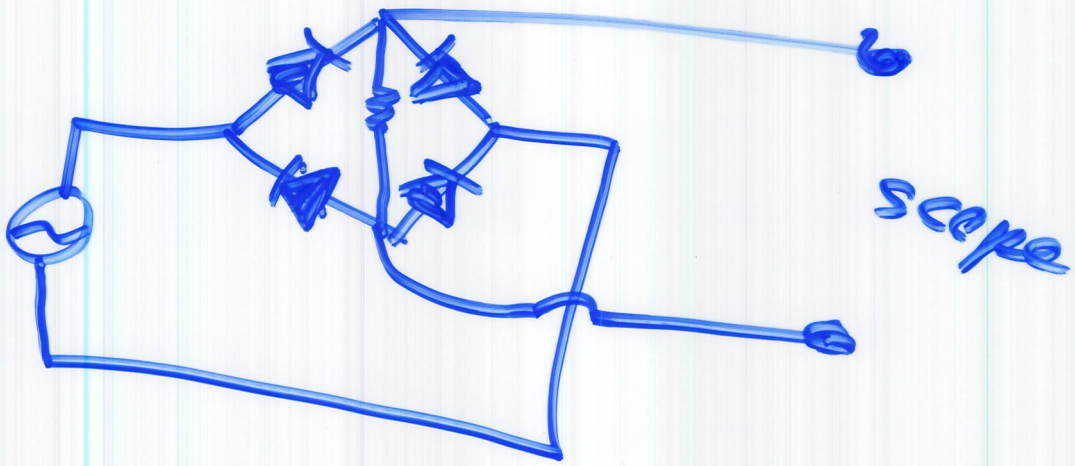


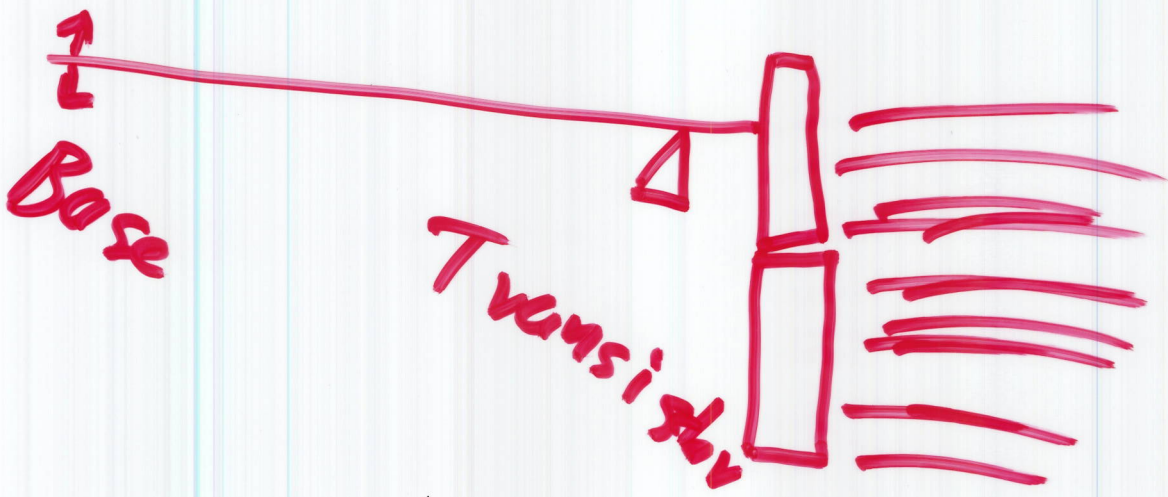
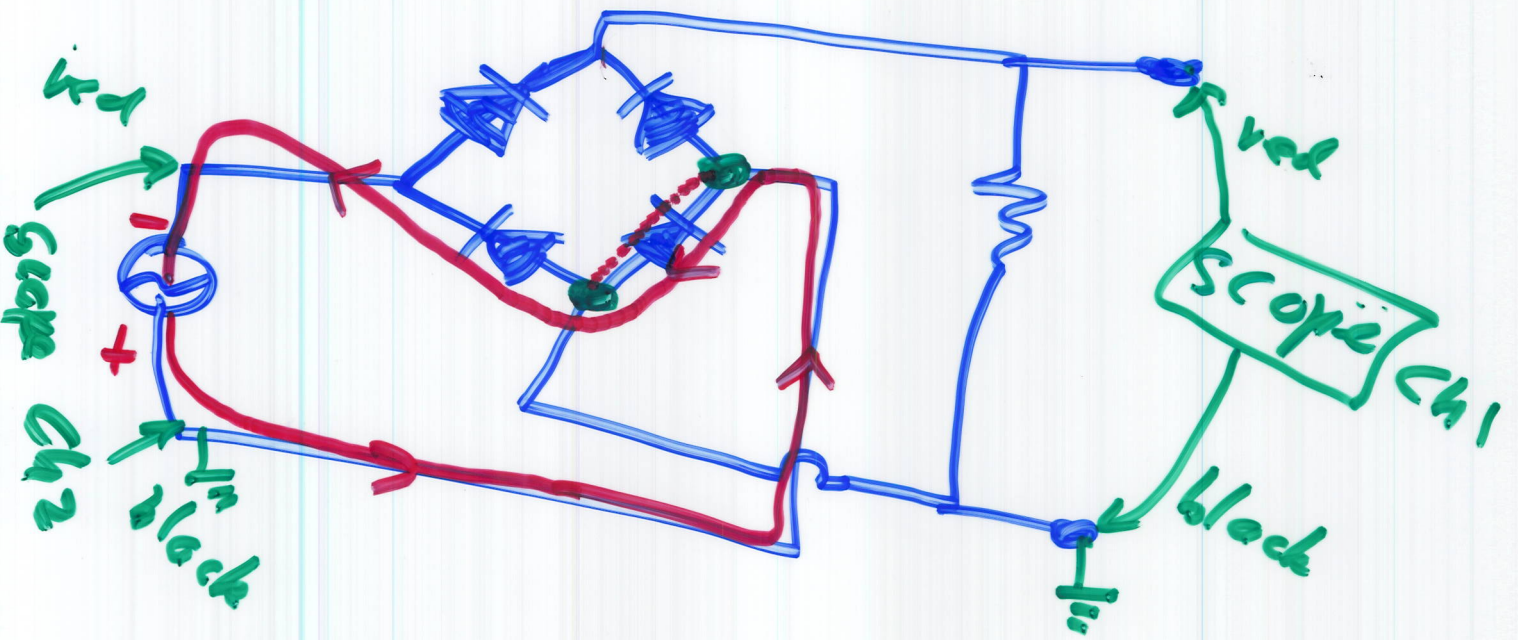


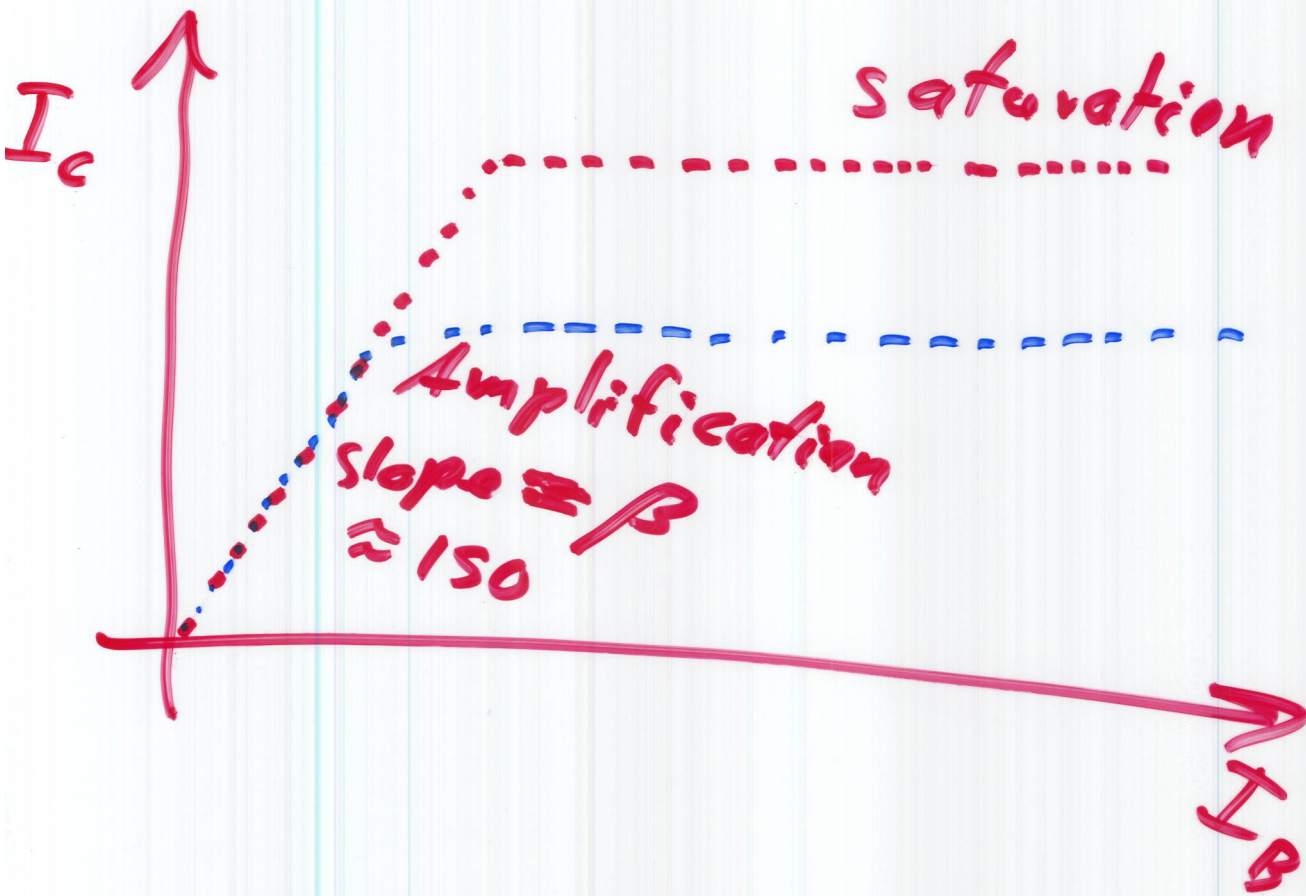
$x_1$

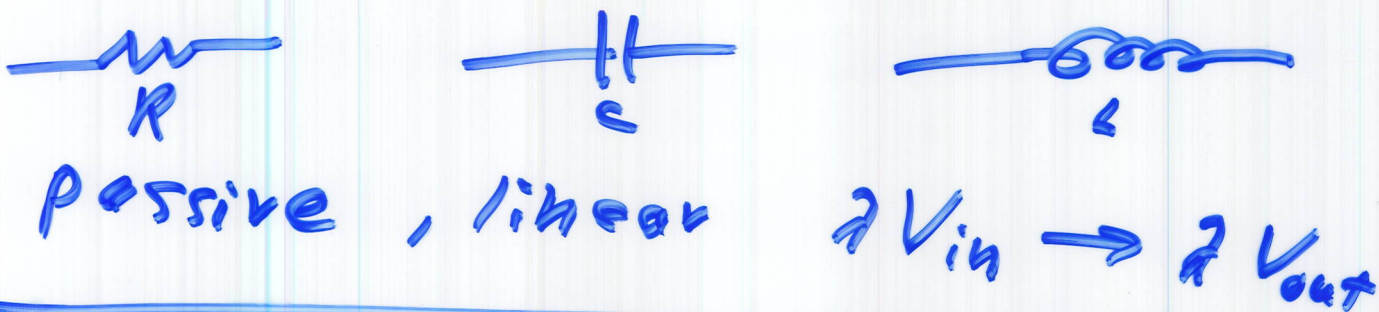


$x_2$

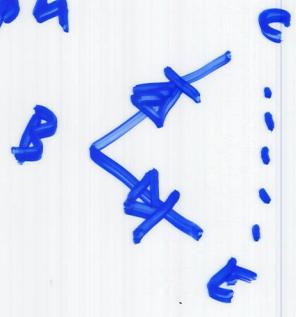
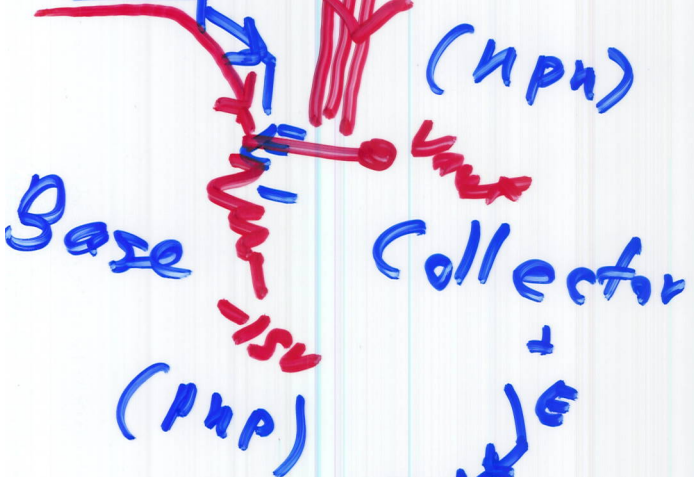






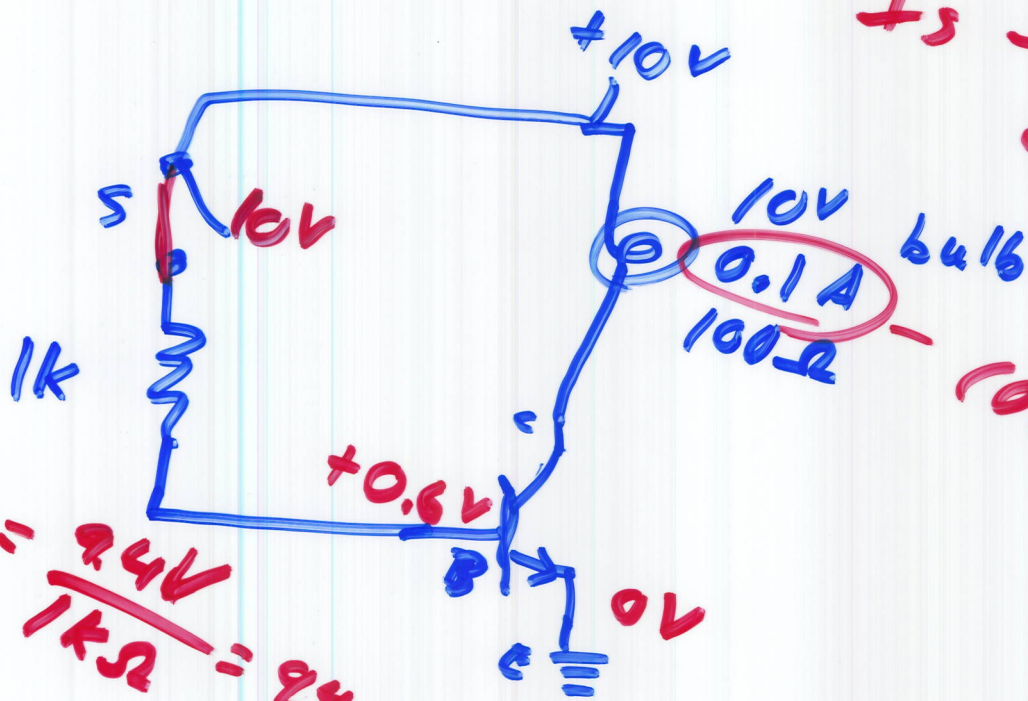


$\beta \approx g \approx h_{FE} \approx 100$



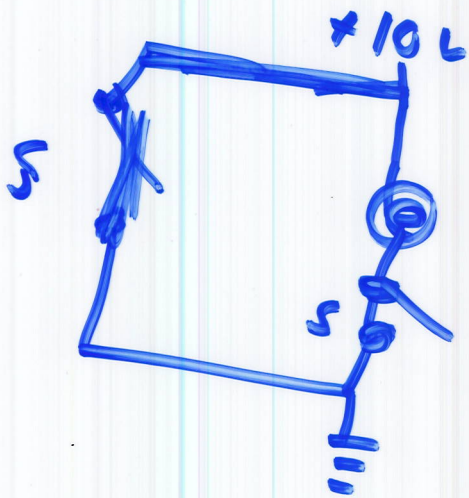
$I_c \sim I_E$  ,  $I_c = \beta I_B \approx 100 I_B$   
 $V_B - V_E = 0.6V$

# Transistor Switch



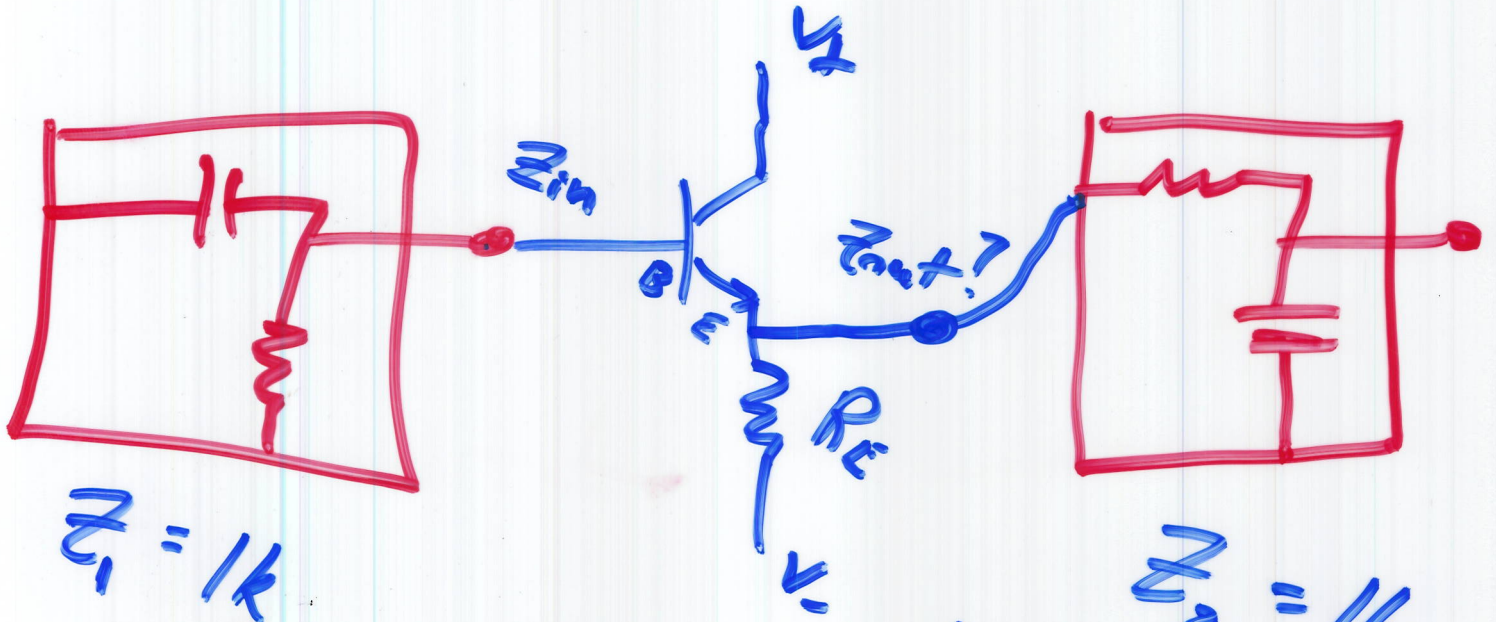
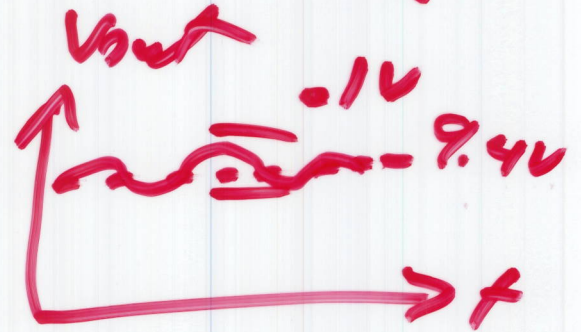
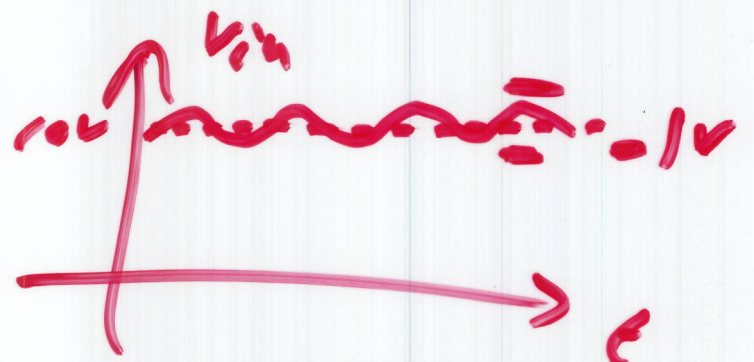
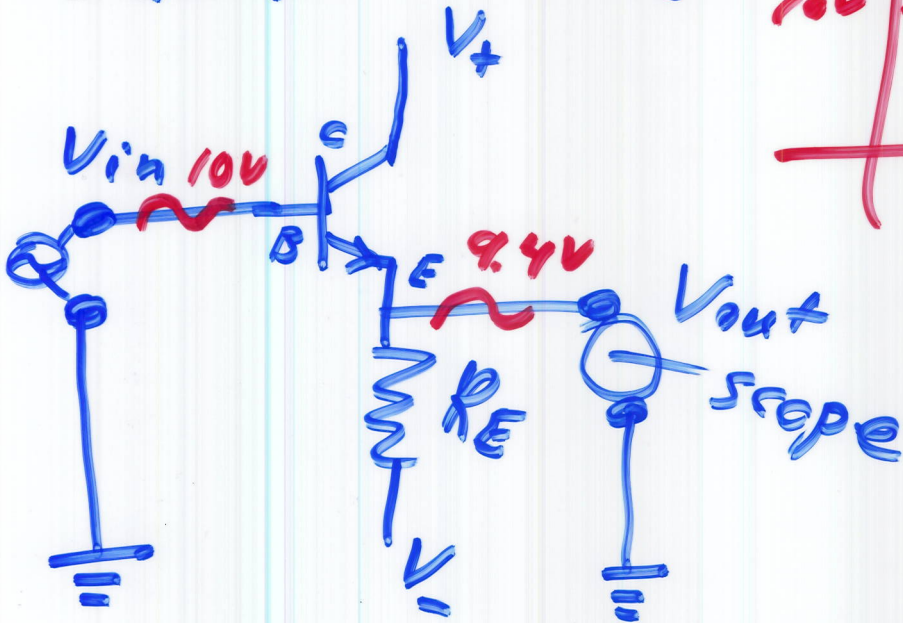
$I_s \approx I_c \approx I_E$   
 $940\mu A$ ? No.  
 $100\mu A$

$$I_s = \frac{9.4V}{1k\Omega} = 9.4\mu A$$





# Emitter Follower



$$\begin{aligned}
 \Delta V_B &= \Delta V_E \\
 \Delta I_B &= \frac{\Delta V_B}{100 \Omega} \\
 Z_{in} &= \frac{\Delta V_B}{\Delta I_B} = \frac{\Delta V_E}{\frac{\Delta V_E}{100 \Omega}} = 100 Z_{out} = 100 R_E \\
 Z_{out} &= R_E \parallel \frac{Z_1}{100} \\
 &= 100 \Omega \parallel 10 \Omega \\
 &\approx 10 \Omega
 \end{aligned}$$