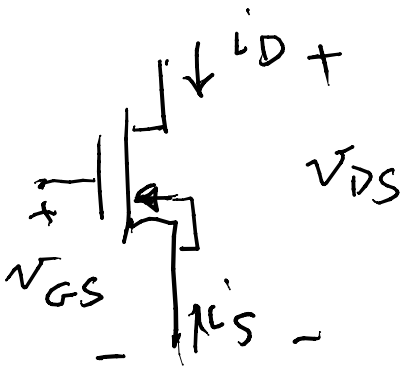
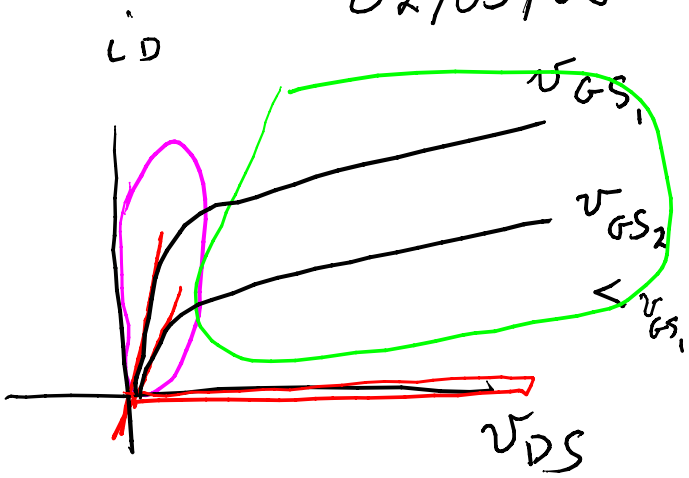
amplifier - MOS

EE 303
02/03/06





$i_D = f(v_{GS}, v_{DS})$

$v_{DS} > 0$

p. 287 Small signal
p. 245 main models

off: $v_{GS} < VTO$ = threshold voltage

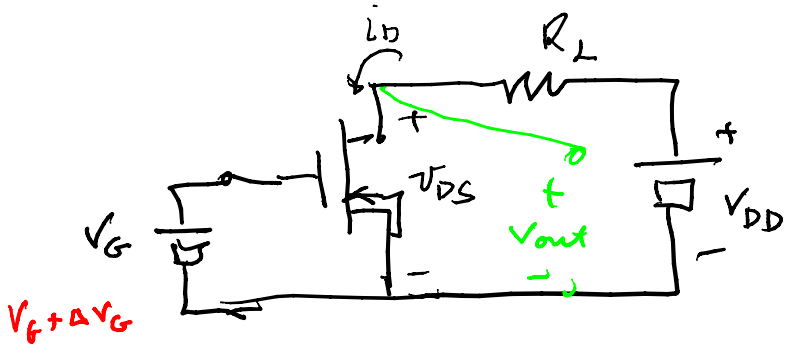
saturation $v_{GS} - VTO \leq v_{DS}$

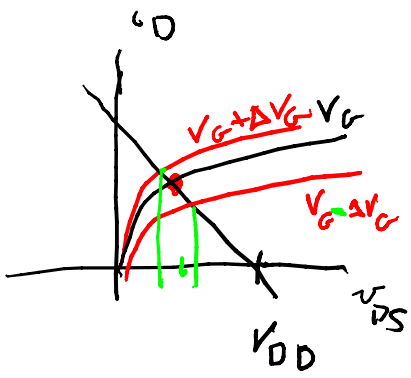
triode = Ohmic $v_{GS} - VTO \geq v_{DS} \geq 0$

(a voltage variable resistor)

Eq. 4.6a: $i_D = \frac{KP}{2}\frac{W}{L}(v_{GS} - VTO)^2$ in sat region

4.5a: $i_D = \frac{KP}{2}\frac{W}{L}\{2(v_{GS} - VTO)v_{DS} - v_{DS}^2\}$





gives an amplifier