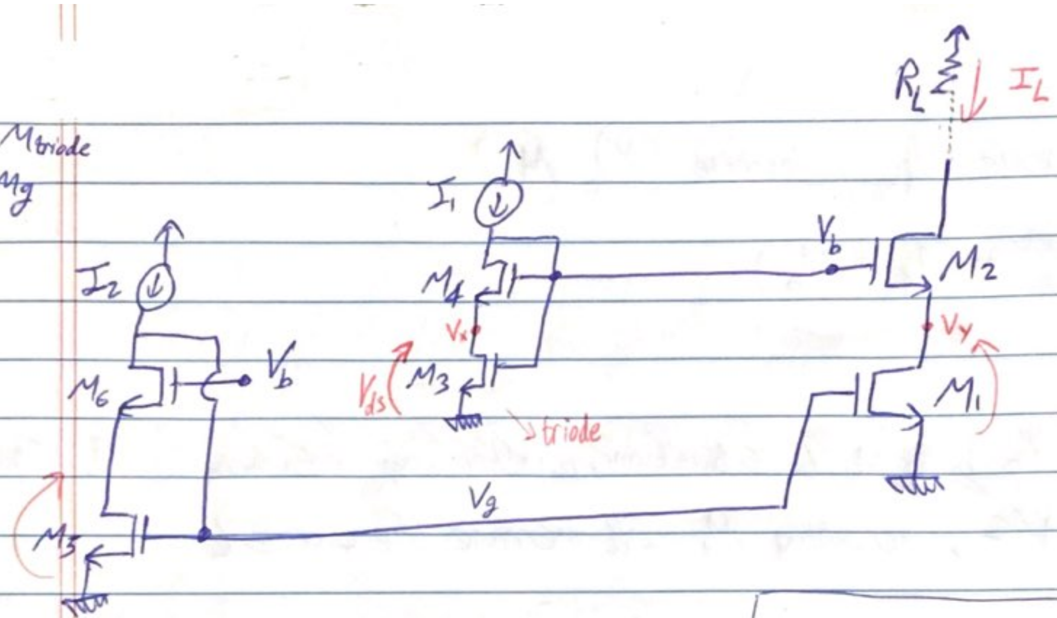
$M_3 \rightarrow M_{triode}$
$M_5 \rightarrow M_g$



~~Let $M_1 = M_2 = M_3 = 1 \times (\frac{W}{L})_u$~~
~~$M_5 = M_6 =$~~
~~1. Adjust M_4 & M_3~~

$$\boxed{\begin{array}{l} \text{If } \dfrac{I_1}{(\frac{W}{L})_4} = \dfrac{I_L}{(\frac{W}{L})_2} \\ \therefore V_{ds_3} = V_{ds_1} = V_{ds_5} \\ \text{because } V_{GS_4} = V_{GS_2} \\ \therefore V_x = V_y \end{array}}$$

* First, let $M_1 = M_2 = M_3 = M_4 = M_5 = M_6 = 1 \times (\frac{W}{L})_u$

Make sure that:

$I_L = I_1 = I_2$

$V_{ds_1} = V_{ds_3} = V_{ds_5}$

↳ in this case M_1, M_3, & M_5 are in triode region,

(1) so we need to size M_5 to lower V_g till M_1 gets into saturation, with the same V_{ds_1}.

⇒ So now, we'll have $V_{ds_1} = V_{DSAT}$ instead of $V_{ds_1} = V_{gs \text{ of current source}}$ as in traditional current mirror circuit.

↳ increasing $(\frac{W}{L})_5$ will decrease V_g

$\therefore I = \frac{1}{2} \mu n C_{ox} \frac{W}{L} (V_{GS} - V_{th})$

(2)

* To decrease $V_{ds_{3,1}}$, increase M_3 $(\frac{W}{L})_3$.

(decrease R_{ON})

③

* To decrease V_{ds_2}, increase $\left(\frac{W}{L}\right)_2$ M_2

$(M_2 = M_4 = M_6)$

↳ ~~In ①, to bring M_1 to saturation, another way is to increase M_1 $\left(\frac{W}{L}\right)_1$~~
WRONG, increasing M_1 will increase the current

In the current mirror branch, I need:
↳ A good V_g for M_1 to provide current (be ON)
↳ less headroom consumption from M_2 for M_1 to be in saturation

So, starting from all $1 \times \left(\frac{W}{L}\right)_u$

① M_2, M_4, M_6 are increased to say 5 ⟶ $V_{DSAT_{2,4,6}}$ are monitored

② Then M_5 increased to decrease V_g (this will decrease I_L)
↳ till M_1's V_{DSAT} decreases till M_1 is in saturation

③ Now, increase M_1 till we get the right current I_L.