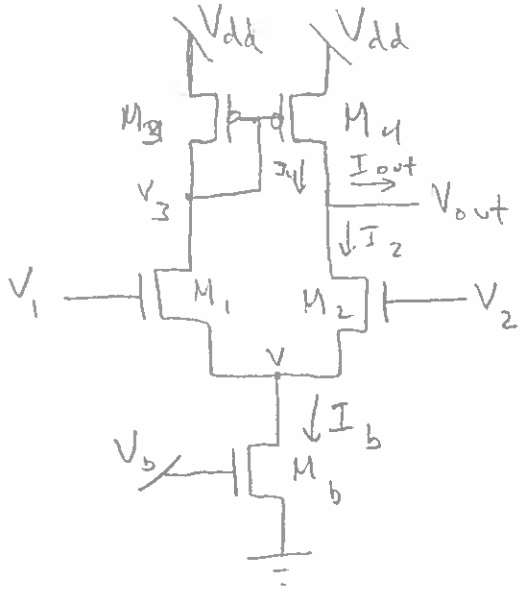
# Prelab 8

Ruby Spring

(1)




KCL → $\boxed{I_{out} = I_4 - I_2}$

im not sure if that's the kind of answer you were looking for...

(2) If we let go of $V_{out}$:

if $I_{out}$ is positive, $V_{out}$ goes up

" " negative, " " down

" " zero, " " nowhere

(3) if $V_1 \uparrow$, $V_2 \downarrow \rightarrow I_4 \uparrow \rightarrow I_{out} \uparrow$

so $\boxed{V_1 \text{ is the noninverting input}}$

if $V_2 \uparrow$, $I_2 \uparrow \rightarrow I_{out} \downarrow$

so $\boxed{V_2 \text{ is the inverting input}}$

(4) a) if $V_1 = V_2$ $(= V_{cm}) \rightarrow I_1 = I_2 \rightarrow \boxed{I_{out} = 0}$

b) if $V_{cm} = \frac{1}{2}(V_1 + V_2) \uparrow$, so long as $V_1 = V_2$ $\boxed{I_{out} = 0}$

c) under these circumstances, $\boxed{A_{cm} \approx \frac{\delta V_{out}}{\delta V_{cm}} = 0 \text{ b/c } \delta V_{out} = 0}$

d) if $V_{dm} = V_1 - V_2 \uparrow$, then $V_1 > V_2$ and $\boxed{I_{out} \uparrow}$

e) if $V_{out}$ is drawing no current, $\boxed{V_{out} = V_3}$

f) if $V_{dm} \downarrow$, then $V_2 > V_1$ and $\boxed{V_{out} \uparrow}$ ← if $V_{out}$ is connected to a voltage source so current can flow

g) $A_{dm} \approx \frac{\delta V_{out}}{\delta V_{dm}} \approx$ really big b/c $\delta V_{dm}$ is very small compared to $\delta V_{out}$