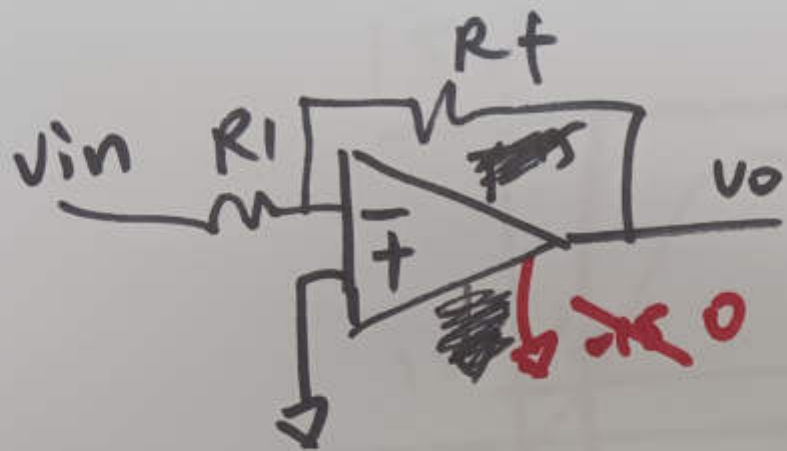
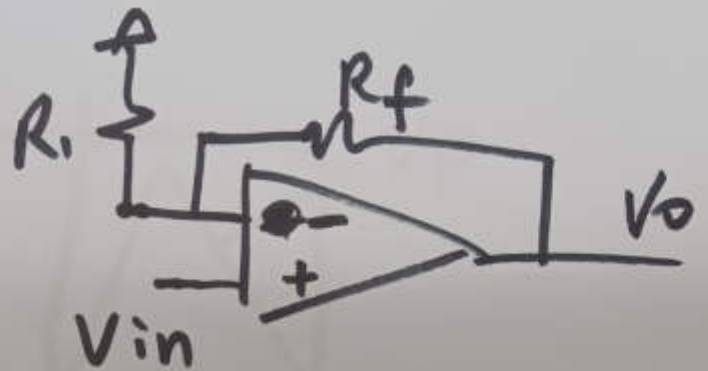


$$V_o = V_{in} \frac{R_f}{R_1 + R_f} + R_1$$

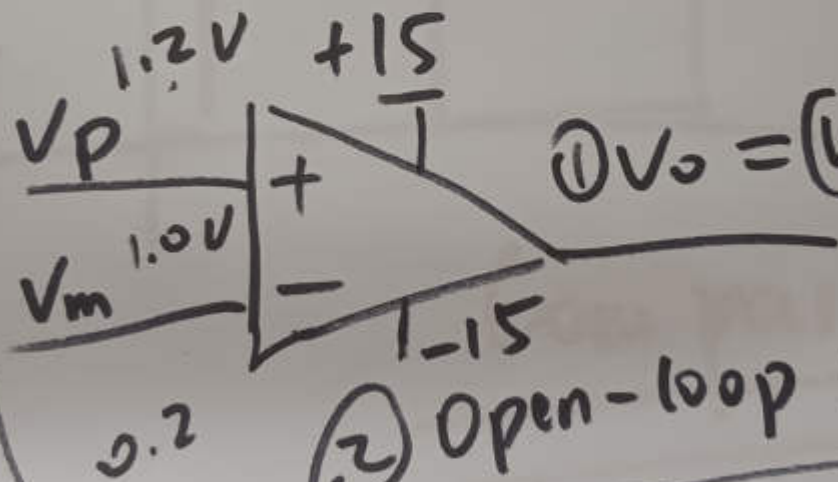
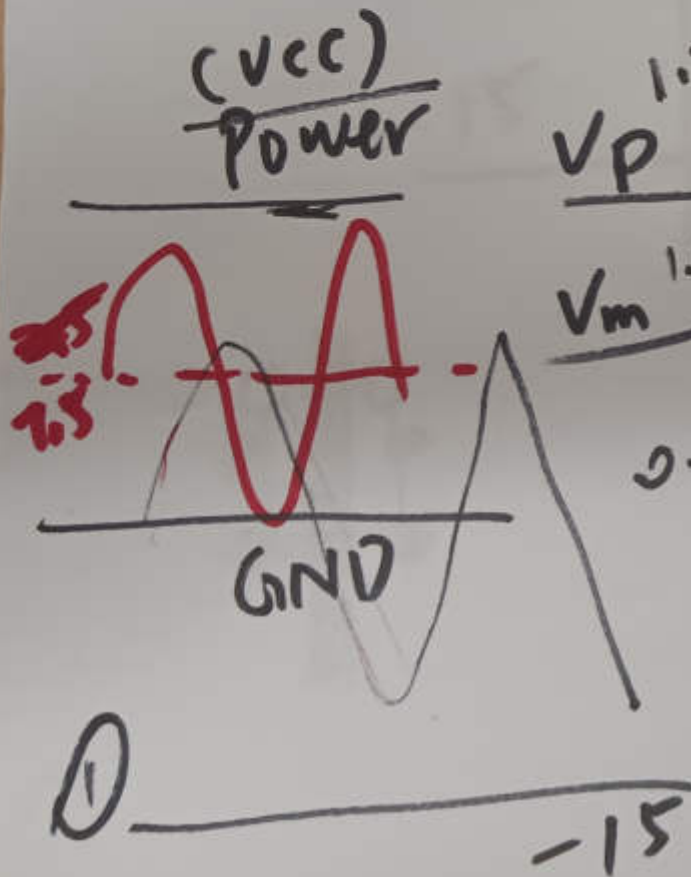
④



inverting configuration

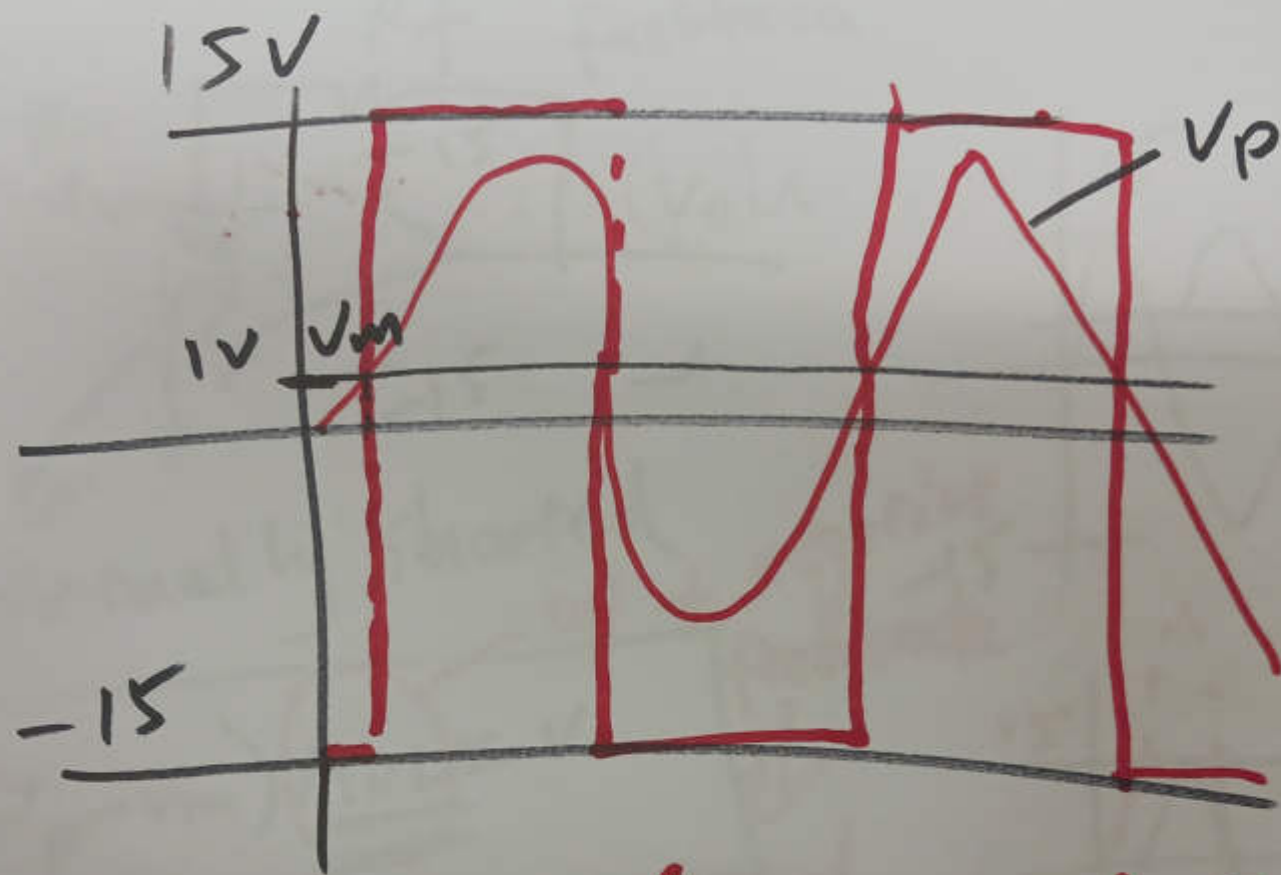


non-inverting.



①  $V_o = (V_p - V_m) \cdot A_{OL}$

② Open-loop gain  $\infty$   
infinity      ideal op Amps  
 1-100 M

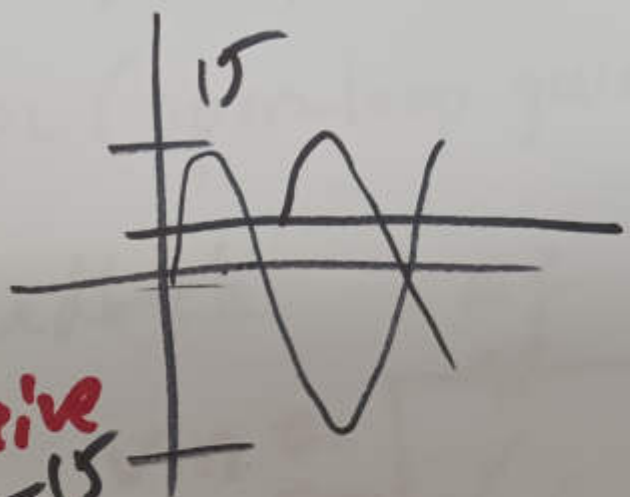
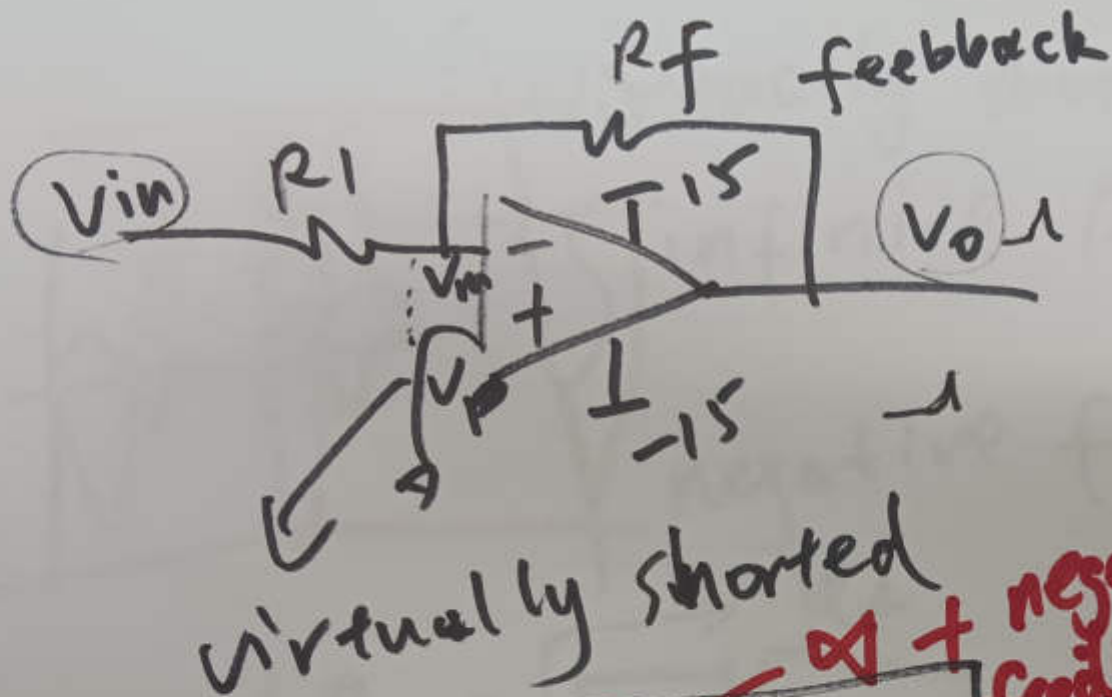


Comparator

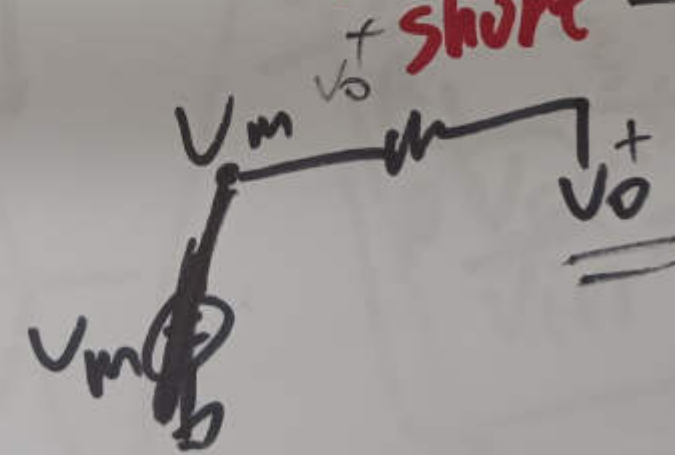
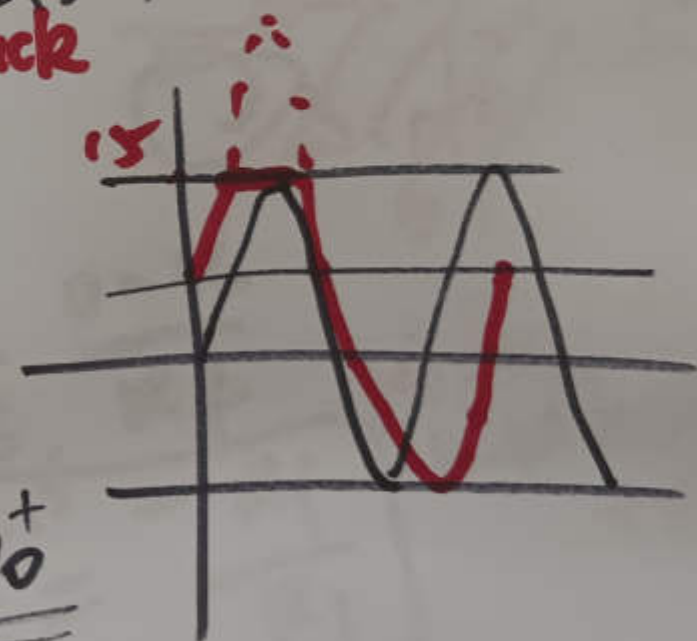


②





$(V_p - V_m) \underline{A_{OL}} = V_o$   
 negative feedback  
 virtual short



3  $V_m$