3.1(1) $R_L' = N^2 R_L = 16 \times 8 = 128\Omega$

$V_{cc} + I_{CQ} R_L' = 2V_{cc}$

$I_{CQ} = \dfrac{V_{cc}}{R_L'} = -93.75mA$

$P_o = \dfrac{1}{2} I_{CQ} V_{cc} = 562.5mW$, $P_{DC} = I_{CQ} V_{cc}$

$\eta_c = \dfrac{P_o}{P_{DC}} = 50\%$

(2) $P_o = \dfrac{1}{2} I_{CQ}^2 R_L = 35.16mW$

$\eta_c = \dfrac{P_o}{P_{DC}} = 3.13\%$

(3) $R_L' = N^2 R_L = 256\Omega$

$U_L = I_{CQ} R_L' = -24V$, $|U_L| > |V_{cc}|$, $|V_{omax}| = 12V$

$P_o = \dfrac{V_{omax}^2}{2R_L'} = 281.25mW$

$\eta_c = \dfrac{P_o}{P_{DC}} = 25\%$

3.3 (1) $P_L = \frac{1}{2}I_c^2 R_L = 3.54W$

(2) $P_{DC} = \frac{2I_c}{\pi} \cdot \frac{V_{cc}}{2} = 5.01W$

$\eta = \frac{P_L}{P_{DC}} = 70.7\%$

3.5 VT_1、VT_2 一直导通 （交流小信号分析、不用考虑直流压降）

$u_i > 0$ 时 VT_3 导通. VT_4 截止, $VT_{1\sim4}$ 均看作射极跟随器

对上半部分：

$(\beta+1) i_{B1} + i_{B3} + \frac{u_i}{R_1} = 0$

$(\beta+1) i_{B3} = \frac{u_0}{R_L} = \frac{u_i}{R_L}$

$i_0 = (\beta+1) i_{B3}$

$i_i = -2 i_{B1}$ （近似处理）

$\Rightarrow A = \frac{i_0}{i_i} = 459.33$

求：$i_i = -i_{B1} + i_{B2}$

$i_{B2} = \frac{u_i}{(1+\beta) R_2}$

$\Rightarrow A = \frac{i_0}{i_i} = 524.08$