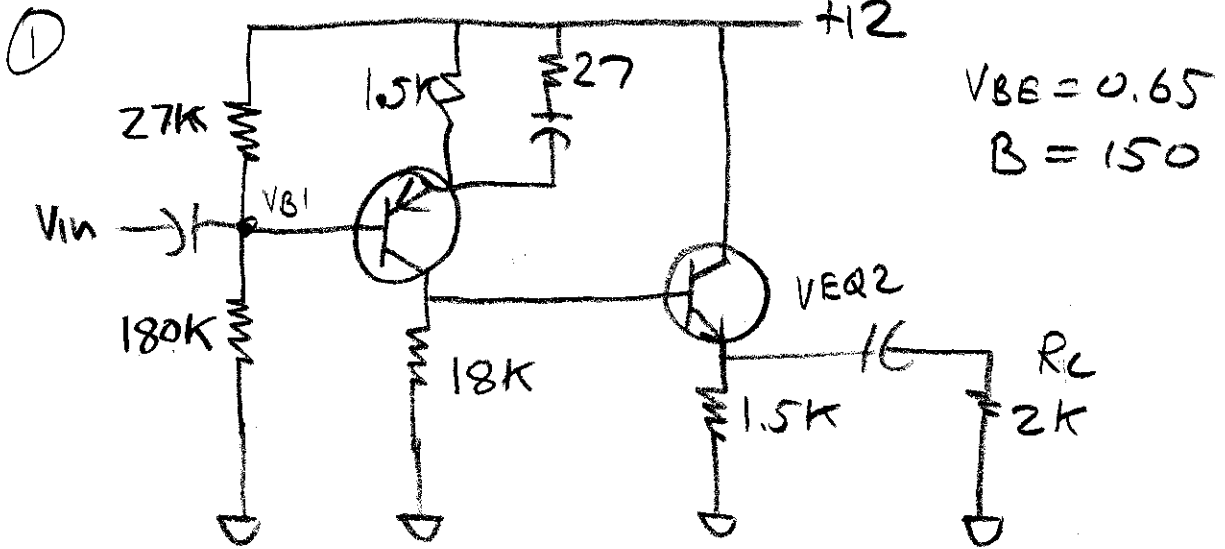
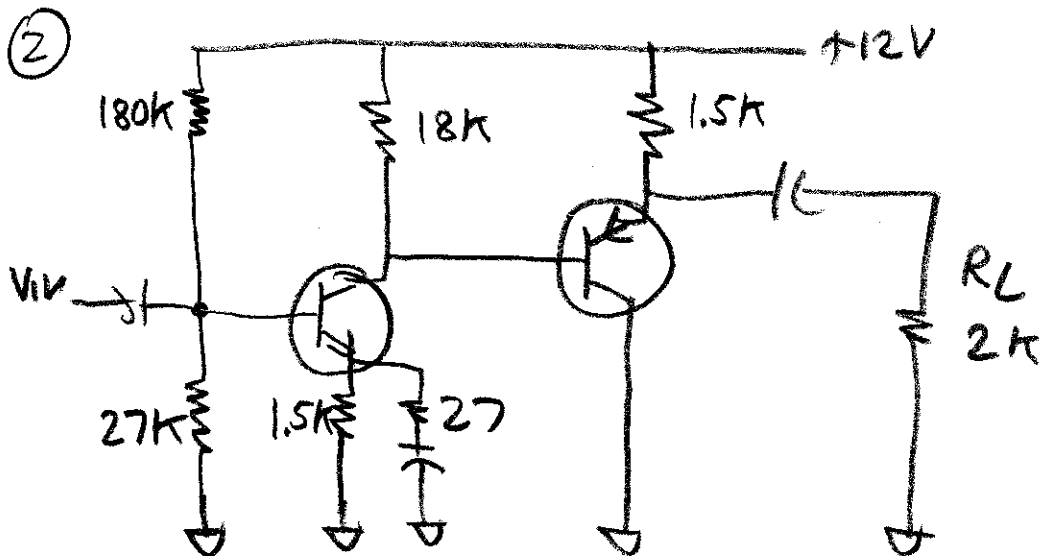


Multistage HW

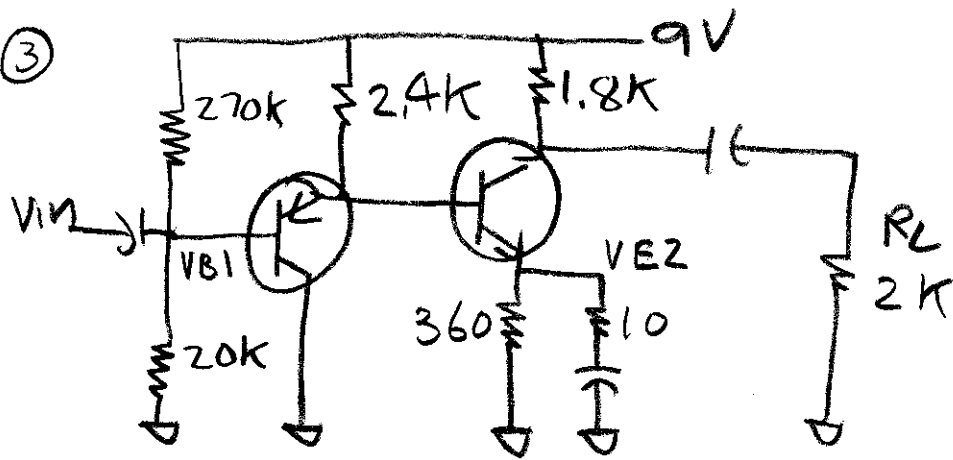


Analyze: Answers $R_{in} = 7573$ $R_o = 114$
 $A_v = 223$ $A_{vL} = 211$ $P_g = 52.3 \text{ dB}$
 check $V_{B1} = 10.5$ $V_{E2} = 8.6$



Answers identical to above
 $V_{B1} = 1.5 \text{ V}$ $V_{E2} = 3.4 \text{ V}$

③

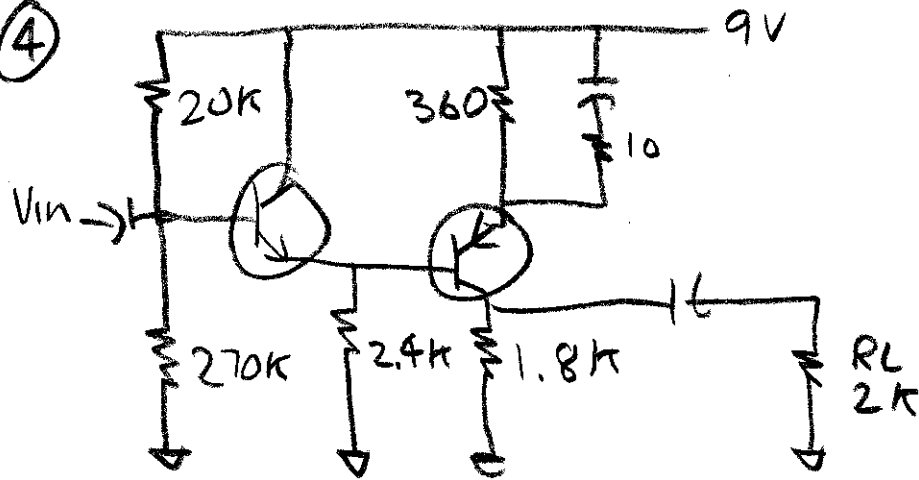


$$V_{BE} = 0.65$$

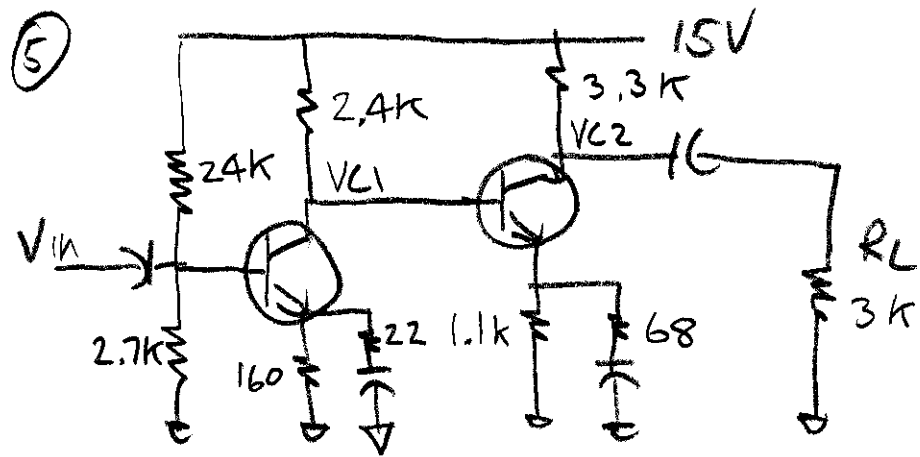
$$\beta = 150$$

Analyze: Answers $R_{in} = 17k$, $R_o = 1.8k$
 $A_v = 92$ $A_{vL} = 48.4$
 $P_g = 43dB$
 check: $V_{B1} = V_{B2} = 1V$

④

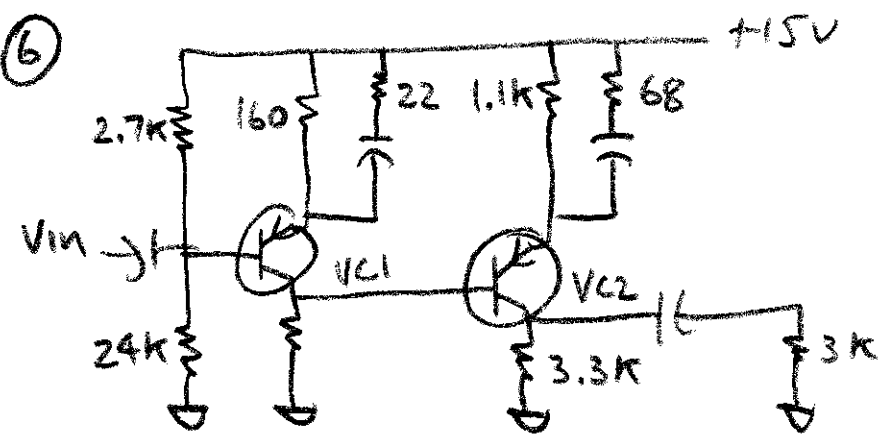


Answers identical to above
 check $V_{B1} = V_{B2} = 8V$



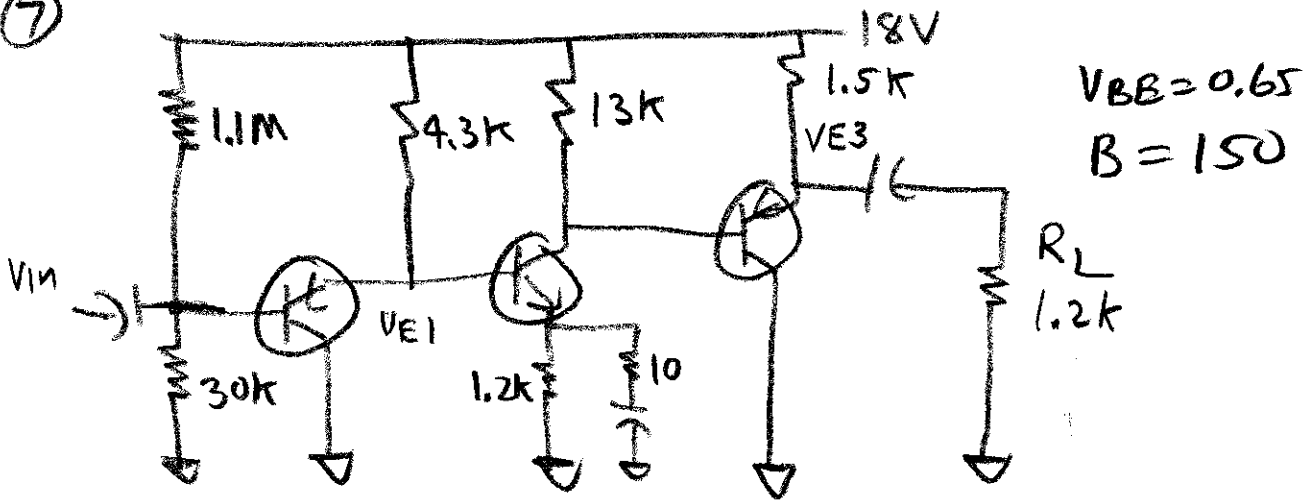
$V_{BB} = 0.65$
 $\beta = 150$

Analyze: Answers: $R_{in} = 1530$, $R_o = 3.3k$, $A_v = 3016$
 $A_{vL} = 1436$, $A_g = 60.2dB$
 check $V_{C1} = 3.2$ $V_{C2} = 7.3$



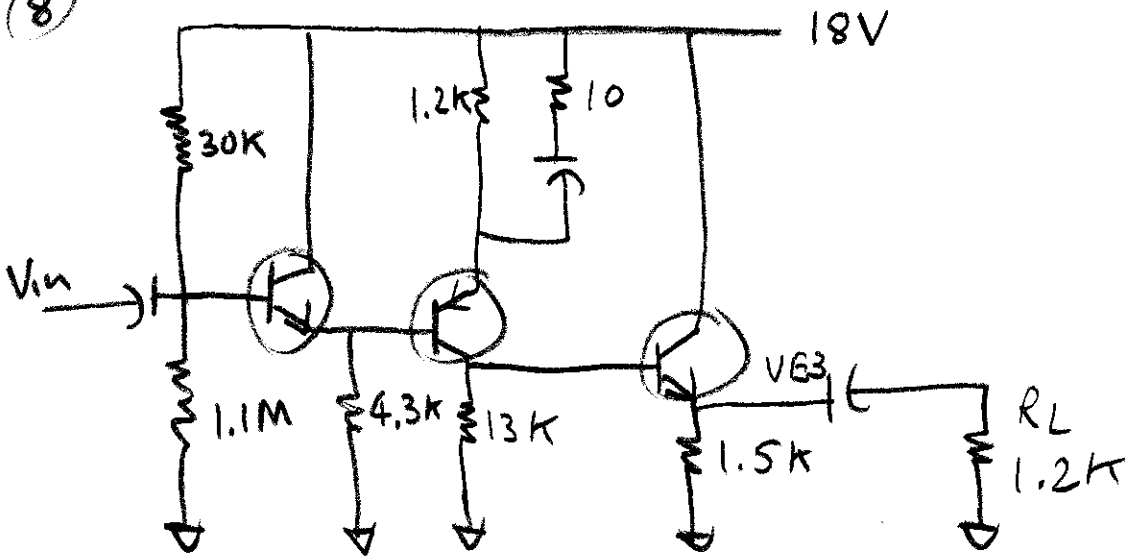
Answers identical to above
 check $V_{C1} = 11.8$ $V_{C2} = 7.7$

7



Analyze Answers $R_{in} = 27k$ $R_o = 84.3$ $A_v = 350$
 $A_{vL} = 327$ $A_p = 63.8dB$
 Check $V_{E1} = 1.9V$ $V_{E3} = 6.8V$

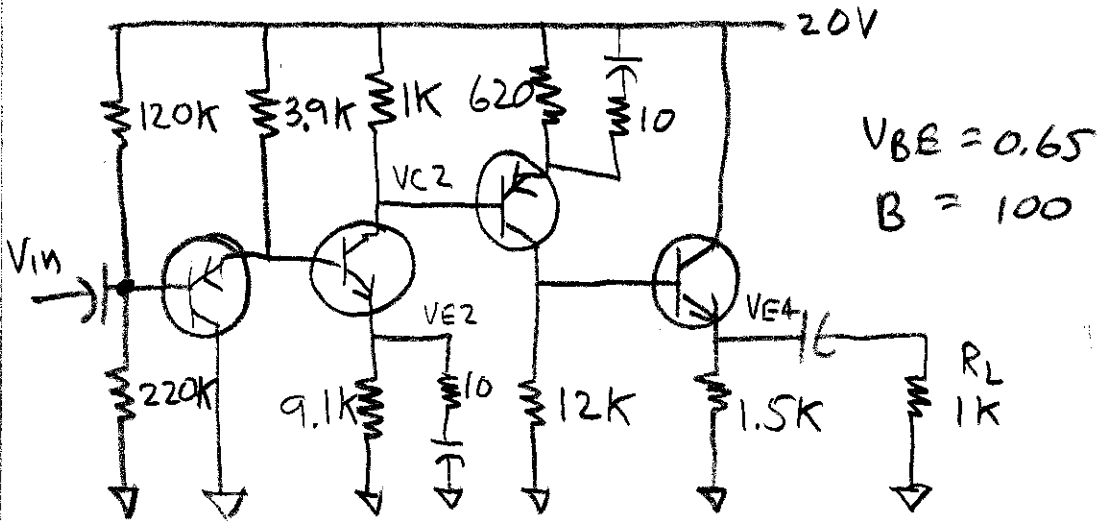
8



Answers identical to Above
 check $V_{E1} = 16.1$ $V_{E3} = 12.2$

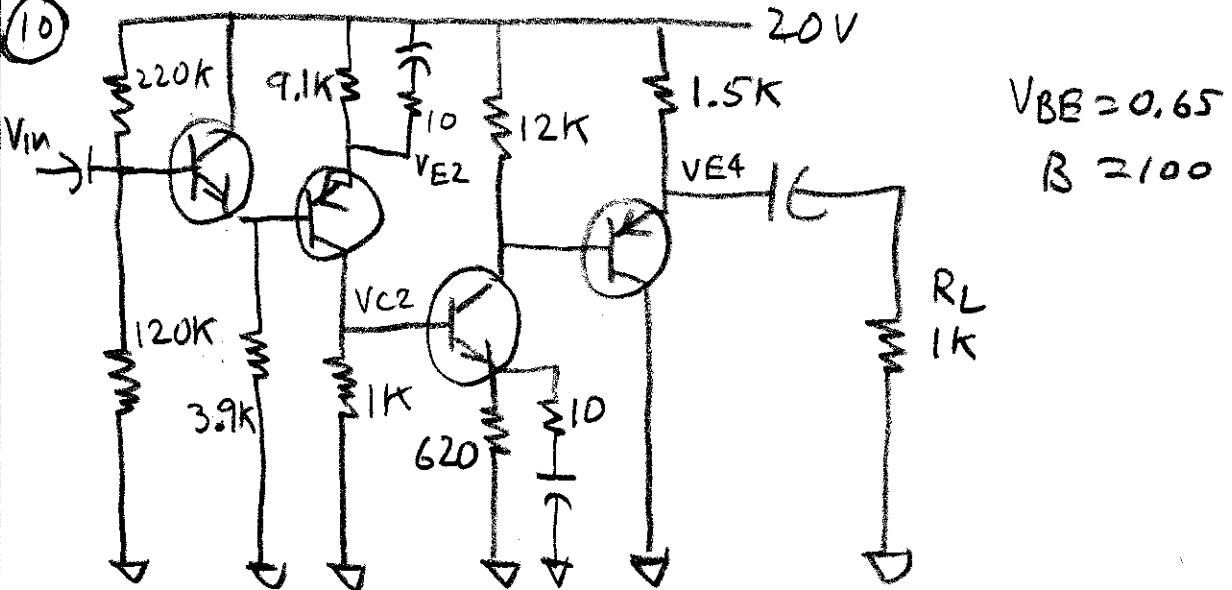
Multistage HW

9



Analyze: Answers $R_{in} = 62.3k$, $R_o = 78\Omega$, $A_v = 10580$
 $A_{vL} = 9816$, $P_g = 97.8dB$
 checks: $V_{E2} = 13.7$ $V_{C2} = 18.5$ $V_{E4} = 14.6$

10



Analyze: Circuit is same as above but
 NPN - PNP swapped
 Answers are identical
 $V_{E2} = 6.3$ $V_{C2} = 1.5$ $V_{E4} = 5.4$