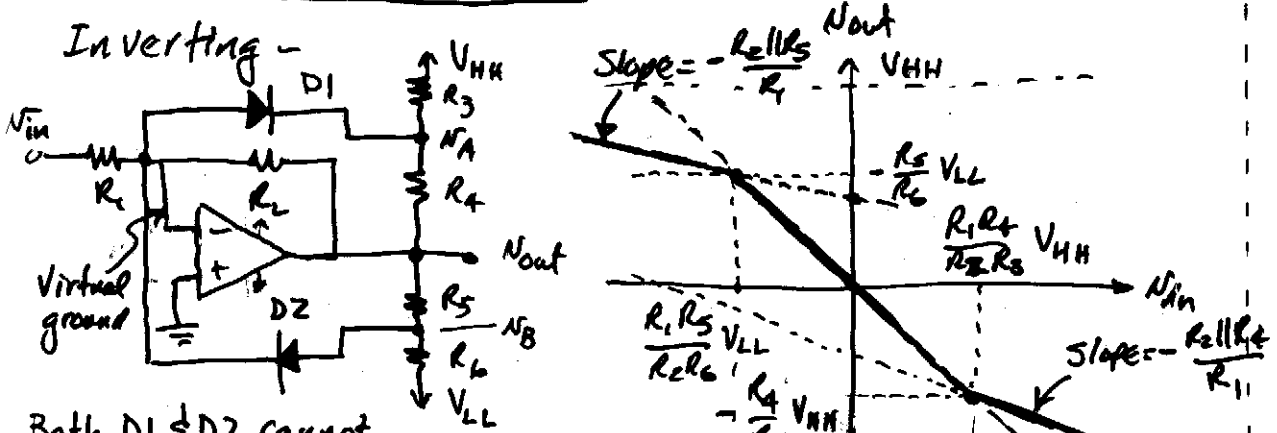


LIMITING AMPLIFIERS



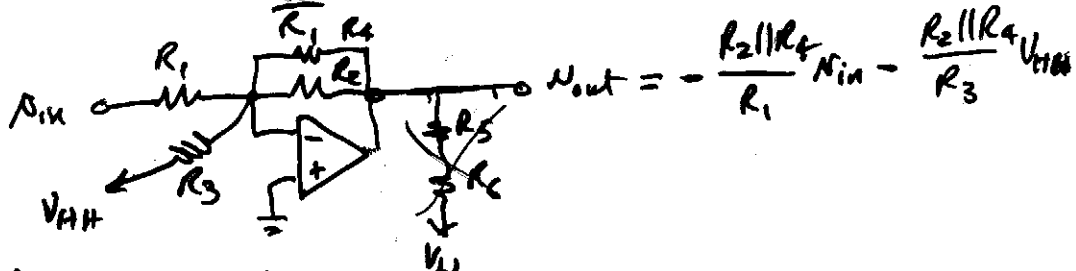
Both D1 & D2 cannot be ON simultaneously.

- ① D1 and D2 are both OFF \leftarrow D2 ON D1 OFF \leftarrow D1 OFF D2 OFF \leftarrow D1 ON D2 OFF \rightarrow
- $$N_{out} = -\frac{R_2}{R_1} N_{in}$$

② D1 is ON when $N_A \leq 0$

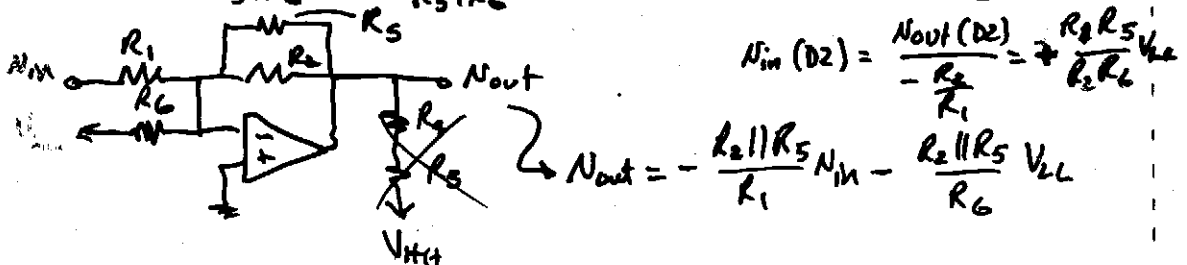
$$N_A = \frac{R_4}{R_3 + R_4} V_{HH} + \frac{R_3}{R_3 + R_4} N_{out} = 0 \rightarrow N_{out}(D1) = -\frac{R_4}{R_3} V_{HH}$$

$$N_{in}(D1) = \frac{N_{out}(D1)}{-\frac{R_2}{R_1}} = \frac{R_1}{R_2} \frac{R_4}{R_3} V_{HH}$$

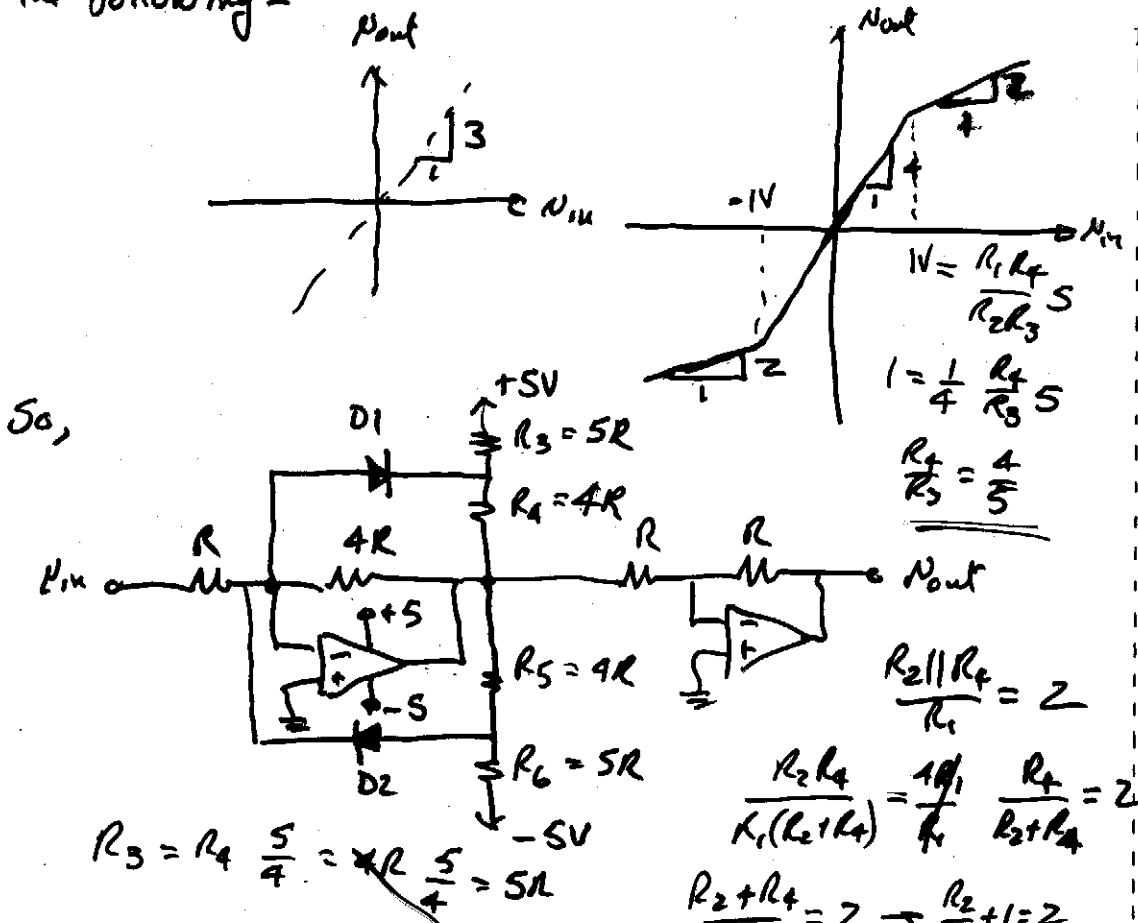


③ D2 is ON when $N_B \geq 0$

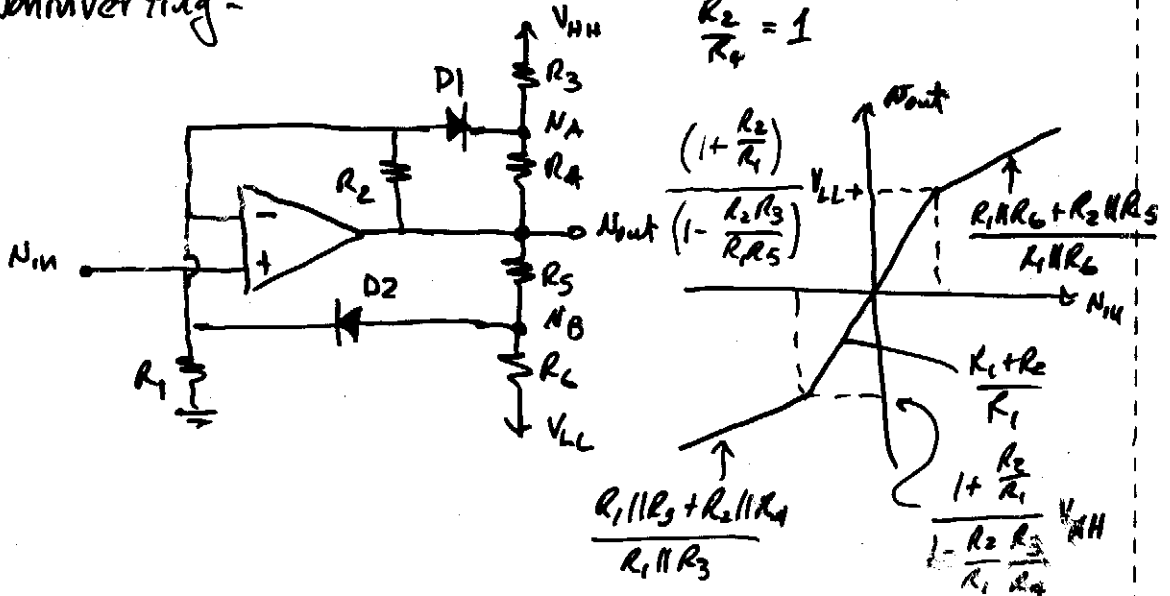
$$N_B = \frac{R_5}{R_5 + R_6} V_{LL} + \frac{R_6}{R_5 + R_6} N_{out} = 0 \rightarrow N_{out}(D2) = -\frac{R_5}{R_6} V_{LL}$$



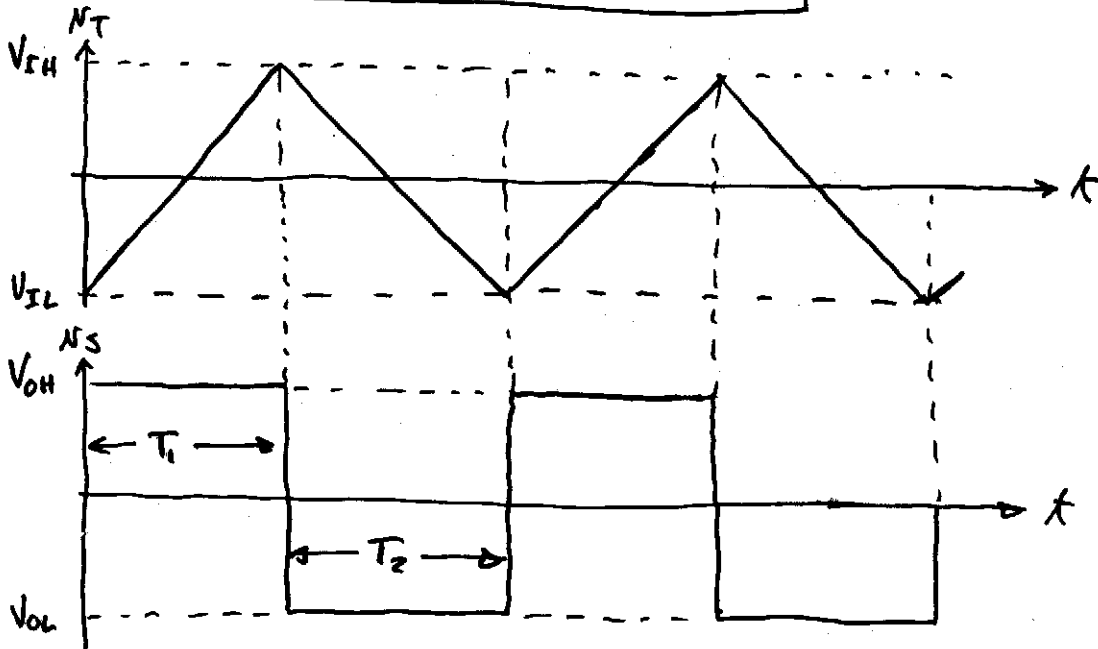
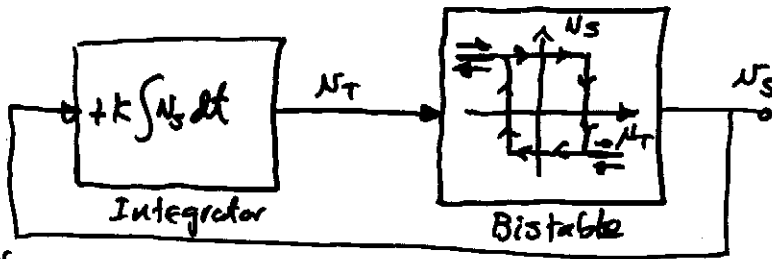
If we used this amplifier in series with -1 amplifier, then for the Wien Bridge RC oscillator example we could do the following -



Noninverting -



Wave form Generators



Quiz 13

- Stability
- Frequency response
- Bode stability