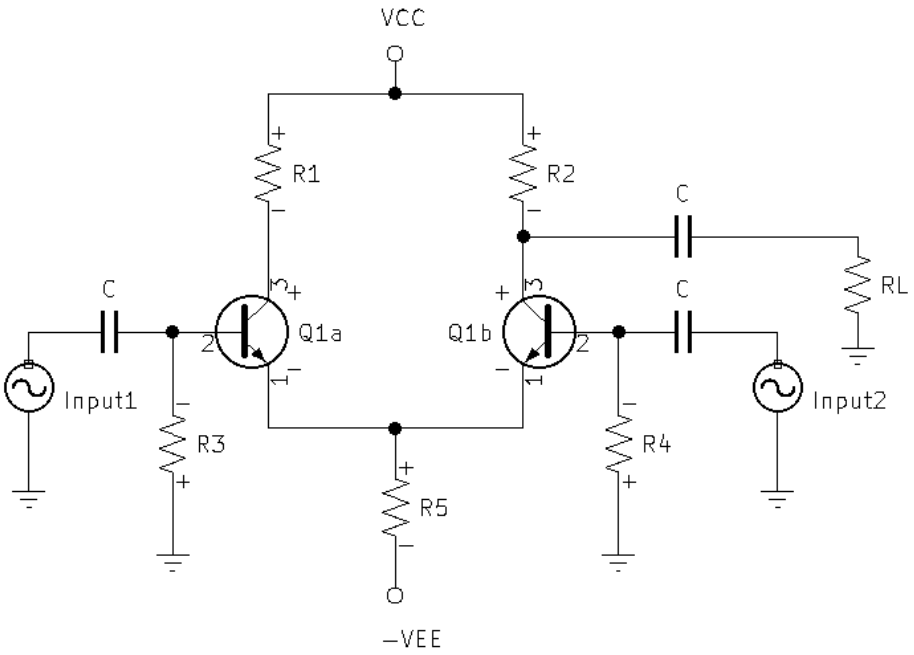
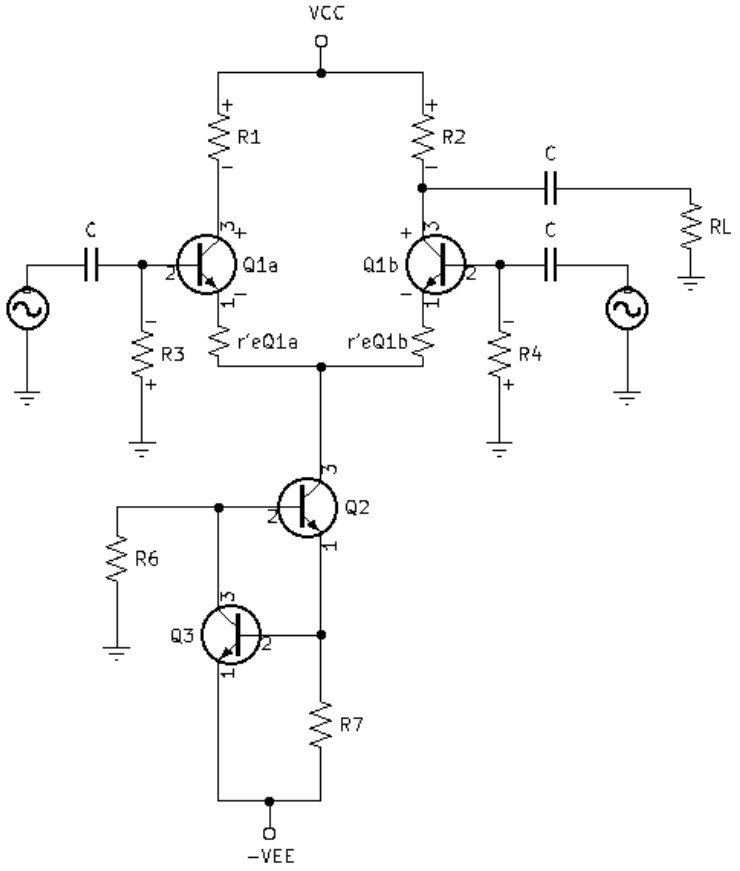
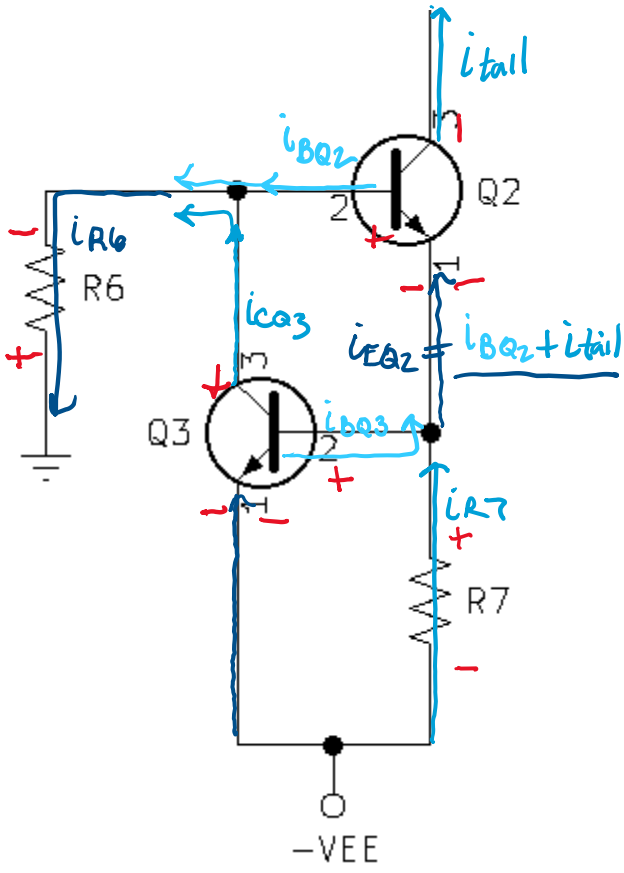


Replace R5 with a Constant Current Source:





Calculate R7 & R6:

- $Beta\ Q2 \approx Beta\ Q3$
- $IC_{Q2} = I_{tail} = IE_{Q1a} + IE_{Q1b}$
- $IB_{Q2} = \frac{IC_{Q2}}{Beta_{Q2}}$
- $IE_{Q2} = IC_{Q2} + IB_{Q2}$
- $R7$:
  - $IR7 = IE_{Q2}$
    - $IR7 = IC_{Q2} + IB_{Q2} - IB_{Q3}$
      - $IB_{Q2} \approx IB_{Q3}$
    - $IR7 = IC_{Q2}$
    - $\boldsymbol{IR7 = I_{tail}}$
  - $VR7 = VBE_{Q3} = 0.7v$
  - $\boldsymbol{R7 = \frac{0.7}{I_{tail}}}$
- $R6$:
  - $IR6 = IC_{Q3} + IB_{Q2}$
    - $IR6 = IC_{Q3} + IB_{Q2}$
      - If the betas are equal and the base currents are equal, then $IC_{Q3} = IC_{Q2} = I_{tail}$
    - $IR6 = I_{tail} + IB_{Q2}$
      - Now put IB_{Q2} in terms of I_{tail}
      - $IB_{Q2} = \frac{I_{tail}}{Beta}$
    - $IR6 = I_{tail} + \frac{I_{tail}}{Beta}$
      - Factor out I_{tail}
    - $\boldsymbol{IR6 = I_{tail}(1 + \frac{1}{Beta})}$
  - $VR6 = VEE - VBE_{Q2} - VBE_{Q3}$
    - $VR6 = VEE - 1.4v$
  - $\boldsymbol{R6 = \frac{VEE - 1.4v}{I_{tail}(1 + \frac{1}{Beta})}}$