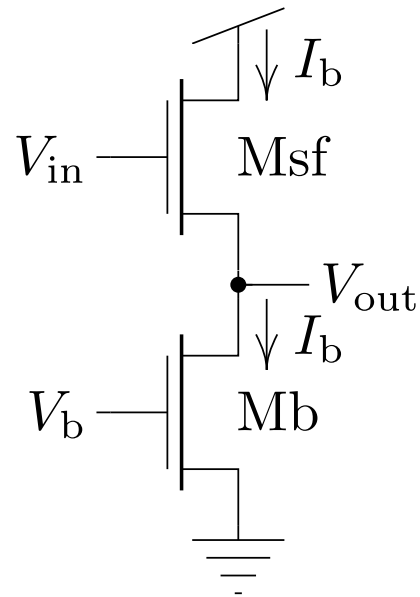
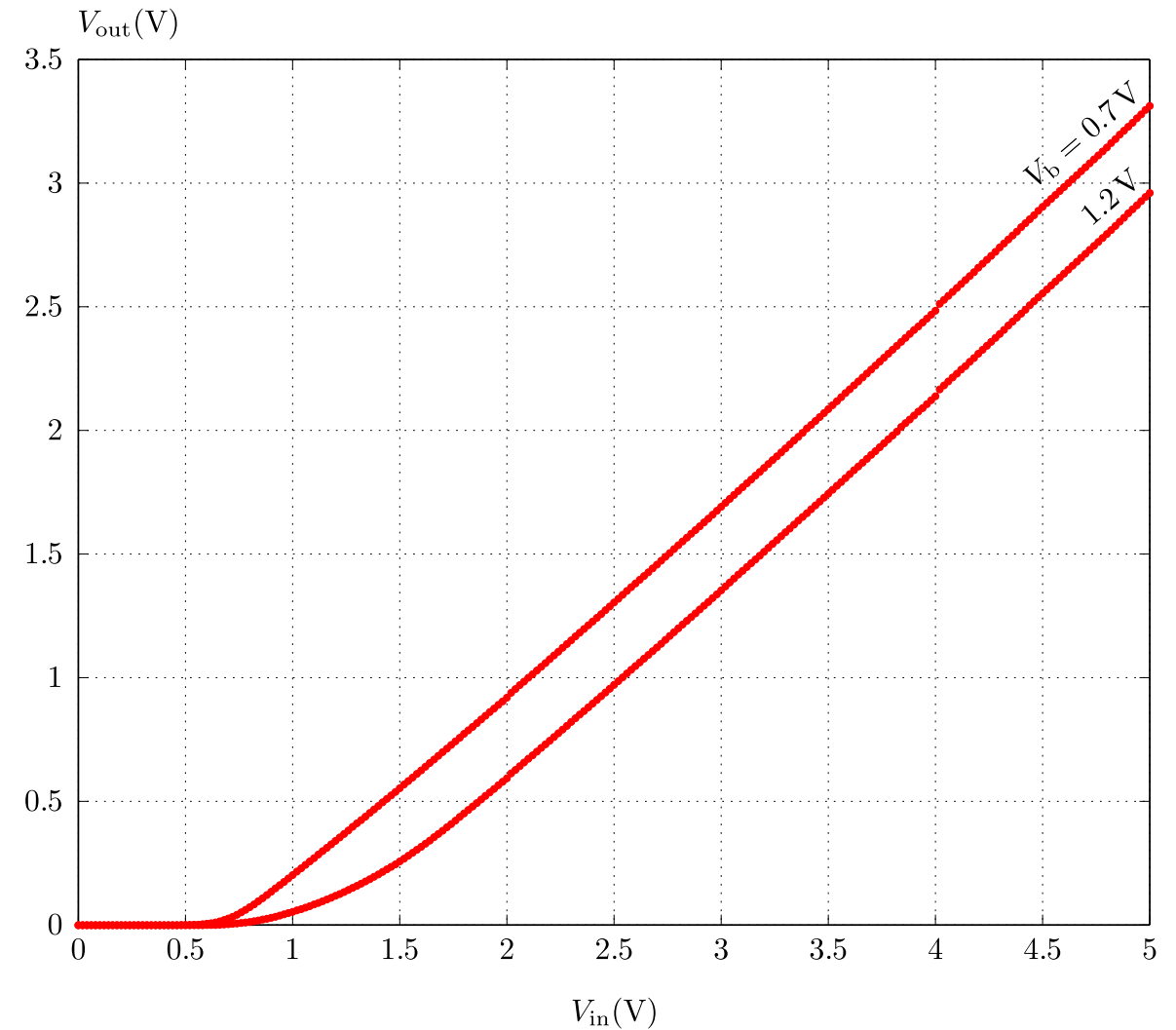


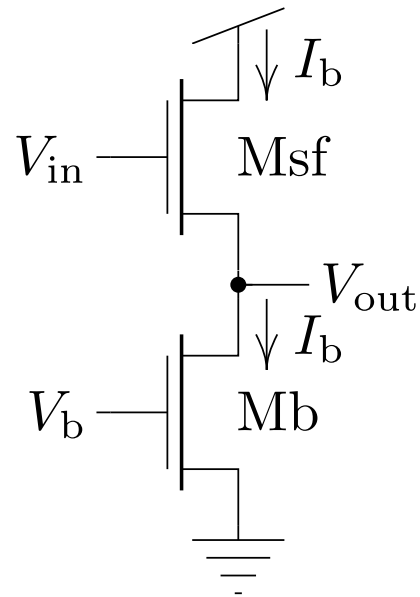
Source Follower Characteristics



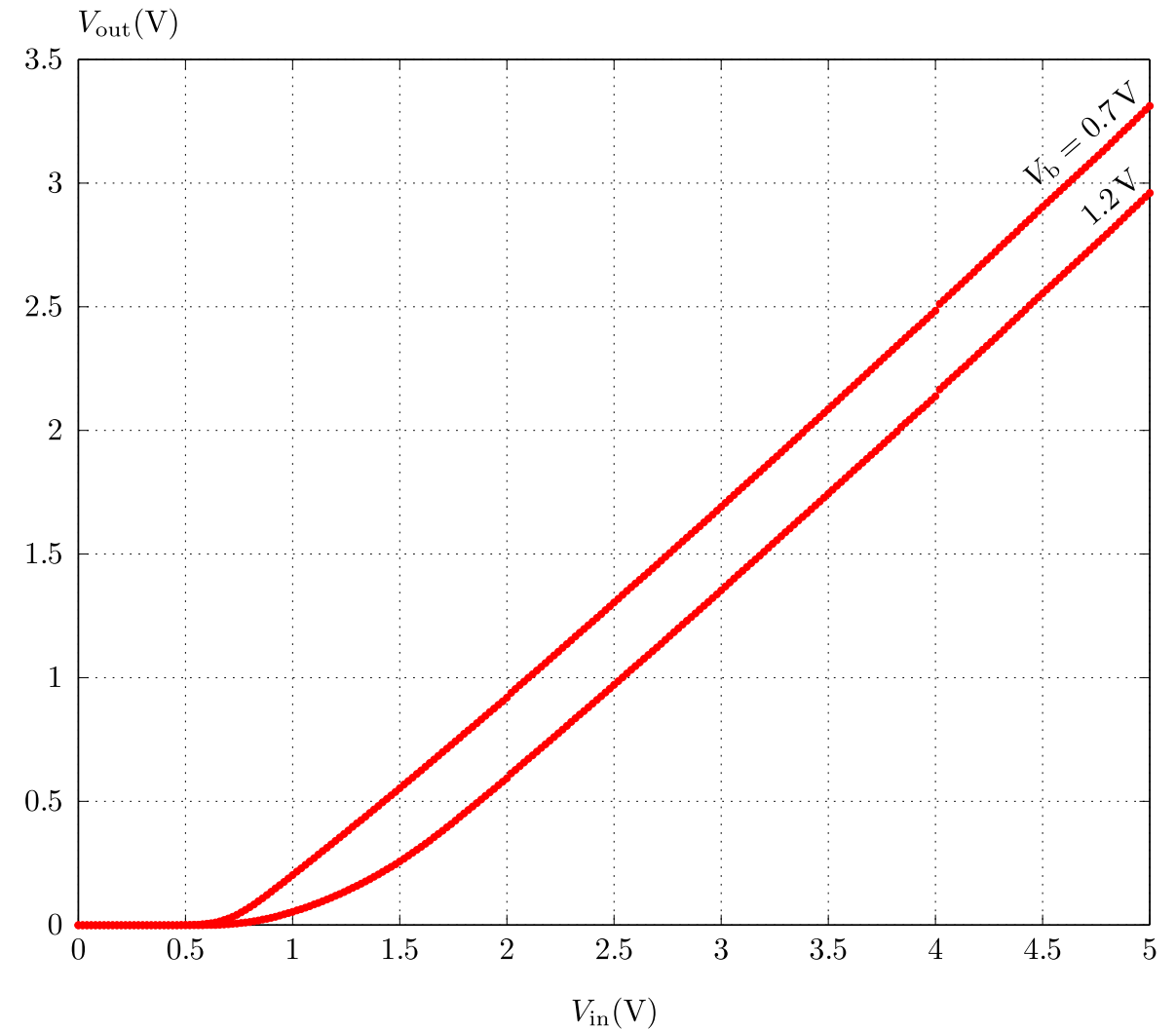
$$\begin{aligned} \text{KCL} \Rightarrow I_b &= SI_s \log^2 \left(1 + e^{(\kappa(V_{in} - V_{T0}) - V_{out})/2U_T} \right) \\ &= SI_s \log^2 \left(1 + e^{\kappa(V_b - V_{T0})/2U_T} \right) \end{aligned}$$



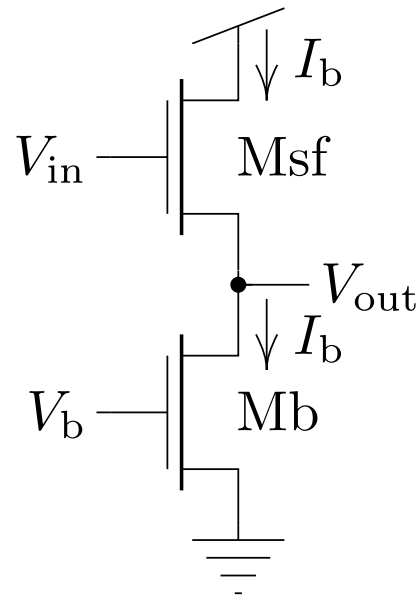
Source Follower Characteristics



$$\begin{aligned} \text{KCL} \Rightarrow I_b &= SI_s \log^2 \left(1 + e^{(\kappa(V_{in} - V_{T0}) - V_{out})/2U_T} \right) \\ &= SI_s \log^2 \left(1 + e^{\kappa(V_b - V_{T0})/2U_T} \right) \\ \Rightarrow \kappa(V_{in} - V_{T0}) - V_{out} &= \kappa(V_b - V_{T0}) \end{aligned}$$



Source Follower Characteristics



$$\begin{aligned} \text{KCL} \Rightarrow I_b &= SI_s \log^2 \left(1 + e^{(\kappa(V_{in} - V_{T0}) - V_{out})/2U_T} \right) \\ &= SI_s \log^2 \left(1 + e^{\kappa(V_b - V_{T0})/2U_T} \right) \end{aligned}$$

$$\Rightarrow \kappa(V_{in} - V_{T0}) - V_{out} = \kappa(V_b - V_{T0})$$

$$V_{out} = \kappa(V_{in} - V_b) \text{ for } V_{in} \geq V_b + \frac{V_{DSsat}}{\kappa}$$

