$$R_2/R_1 = R_4/R_3$$

R_L

$$\frac{V^- - V}{R_1} + \frac{V_0 - V}{R_2} = 0, \qquad \frac{V^+ - V}{R_3} + \frac{V_0 - V}{R_4} = \frac{V}{R_L} = I_L$$

$V_0 - V$

$$V_0 - V = (V - V^-)\frac{R_2}{R_1} = (V - V^-)\frac{R_4}{R_3}$$

$$\frac{V^+ - V}{R_3} + \frac{V - V^-}{R_3} = \frac{V^+ - V^-}{R_3} = \frac{V}{R_L} = I_L$$

I_L

$$R_L = V/R_L = (V^+ - V^-)/R_3$$

I_D

V_D

$$I_D = I_0 \left(e^{V_D/\eta V_T} - 1 \right) \approx I_0 \, e^{V_D/\eta V_T},$$

I_0

η

V_T

$V_D/\eta V_T$

$e^{V_D/\eta V_T} \gg 1$

$$I_0\ e^{V_{in}/\eta V_T} + \frac{V_{out}}{R} = 0,$$

$$V_{out} = -I_0 R \, e^{V_{in}/\eta V_T}$$

$$\frac{V_{in}}{R} = I_0 \, e^{-V_{out}/\eta V_T},$$

$$V_{out} = -\eta V_T \ln \frac{V_{in}}{RI_0}$$

$$V_{out} = C\ \exp(V_{in}/a), \qquad V_{out} = D\ \ln(V_{in}/b)$$

$$C = -I_0 R, \quad a = \eta V_T, \quad D = -\eta V_T, \quad b = R I_0$$