Q1:

由 $\frac{1}{\sigma_1\sqrt{2\pi}}e^{-(\frac{I_1-I_D}{2\sigma_1^2})^2}=\frac{1}{\sigma_0\sqrt{2\pi}}e^{-(\frac{I_D-I_0}{2\sigma_0^2})^2}$

推至 $I_{\mathrm{D}}=\frac{\sigma_0 I_1+\sigma_1 I_0}{\sigma_0+\sigma_1}$ $, when\ \sigma_0=\sigma_1, I_D=\frac{I_1+I_0}{2}, Q=(\frac{I_1-I_0}{\sigma_0+\sigma_1})$