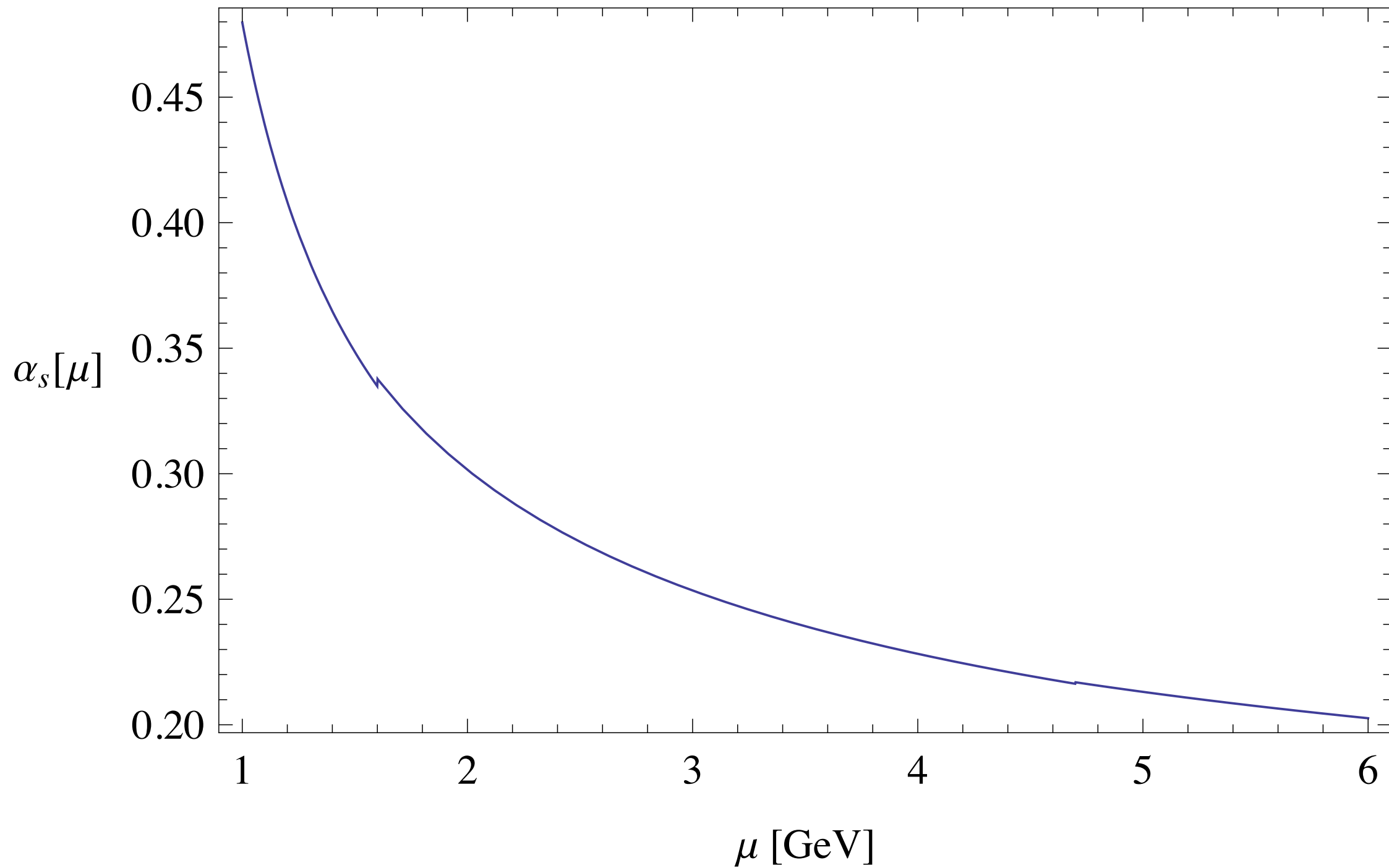
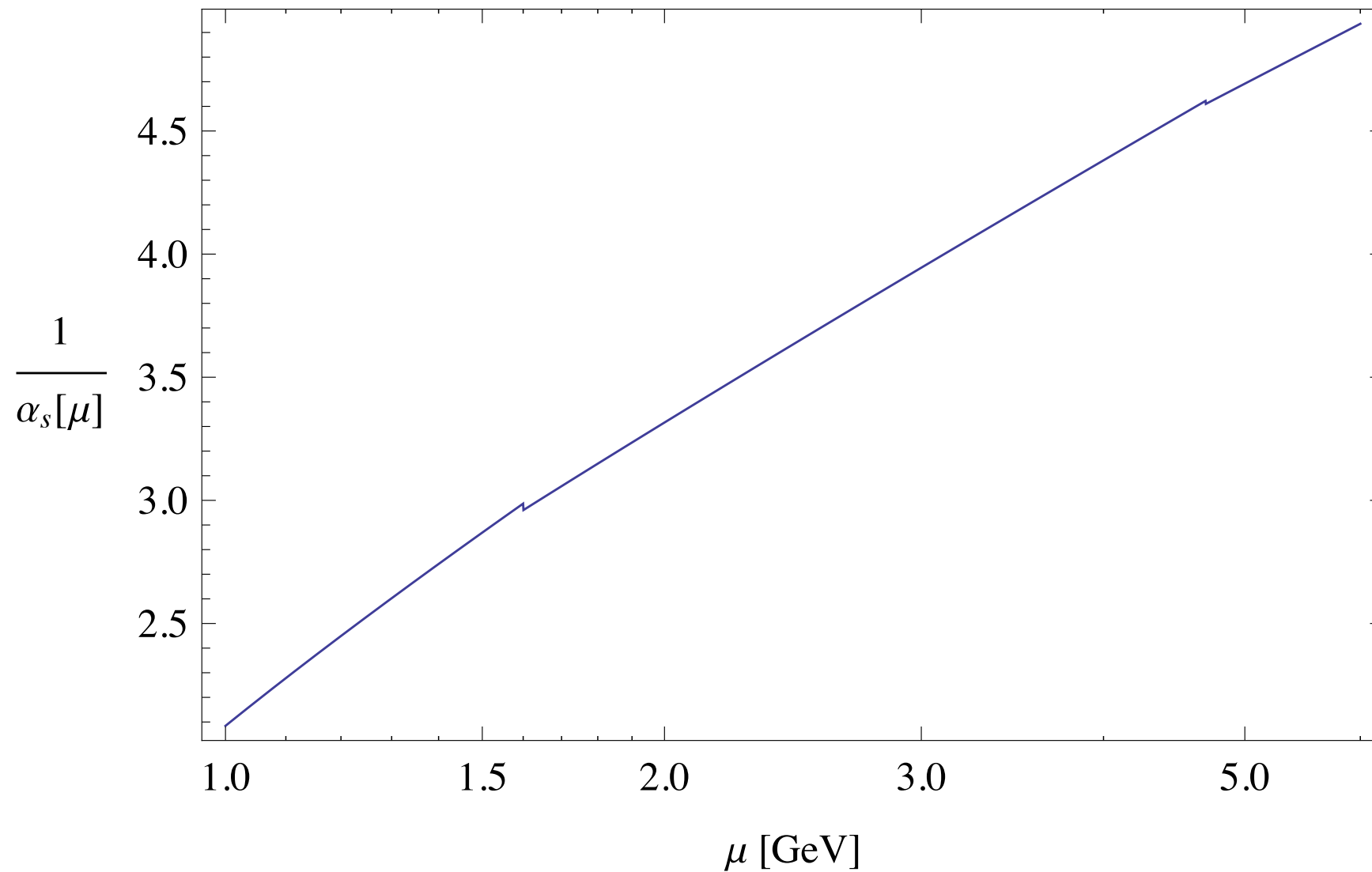


QCD coupling constant $\alpha_s(\mu)$





$$\alpha_s(\mu) = \frac{g_s^2}{4\pi} \approx \frac{4\pi}{\beta_0} \frac{1}{\ln\left(\frac{\mu^2}{\Lambda^2}\right)} \quad ; \quad \frac{d\alpha_s(\mu)}{d \ln \mu^2} = \beta(\alpha) = -\frac{\beta_0}{4\pi} \alpha_s(\mu)^2$$

$$\beta_0 = \frac{11}{3} N_c - \frac{2}{3} n_f \quad ; \quad \begin{array}{l} N_c = 3 \text{ number of colors} \\ n_f \text{ number of quarks} \end{array}$$

