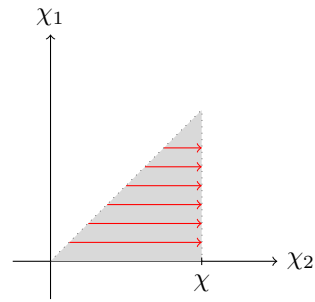Figure 1

Figure 2

Figure 3: Two different way of doing the integration of $f(\chi_1, \chi_2)$ over the triangle area, the inner integral is shown in lines. On the left $\int_0^\chi d\chi_2 \int_0^{\chi_2} d\chi_1 f(\chi_1, \chi_2)$, on the right $\int_0^\chi d\chi_1 \int_{\chi_1}^\chi d\chi_2 f(\chi_1, \chi_2)$