$$line: f_{k+1}(x_{k+1}) - f_{k+1}^* \le (1-\alpha\mu_f)^k(f_0(x_0) - f_0^*) \quad + \frac{\alpha}{2}\sum_{l=0}^{k}(1-\alpha\mu_f)^k - t|\varepsilon_l|^2 \quad + (\eta^* + \eta_0)$$

$\text{norm}_s tr:$