1. How do you get $n_i(0)\tau = \dfrac{2}{\langle \sigma v \rangle} \dfrac{f(\tau)}{(1-f(\tau))}$ by completing the integral $\int_{n_i(0)}^{n_i(\tau)} \dfrac{dn_i}{n_i^2} = -\dfrac{1}{2}\int_0^{\tau} \langle \sigma \nu \rangle_{dt} dt$

where $f(\tau) = \dfrac{n_i(0) - n_i(\tau)}{n_i(0)}$

2. How do you get $n(\tau) = N_0 e^{-\lambda\tau} + \dfrac{s_T}{\lambda}(1 - e^{-\lambda\tau})$ from $\dfrac{dN}{dt} = s_T - \lambda N(t)$