Assignment 4

Find the age of the Universe (in years) taking into account present-day cosmic acceleration. For that solve Friedmann equations with both matter and the cosmological constant. For the current values of the cosmological parameters take \( H_0 = 67.4 \text{ km} \cdot \text{s}^{-1} \cdot \text{Mpc}^{-1}, \Omega_\Lambda = 0.686, \Omega_M = 0.314 \), where

\[
\Omega_\Lambda = \frac{\rho_\Lambda}{\rho_0}, \quad \Omega_M = \frac{\rho_M}{\rho_0}.
\]

One megaparsec makes 1 Mpc = 3.09 \cdot 10^{19} \text{ km}.