Die Friedmann–Gleichung

$$H^2(t) = \left(\frac{\dot{a}}{a}\right)^2 = H_0^2 \left(\frac{\Omega_r}{a^4} + \frac{\Omega_m}{a^3} + \Omega_\Lambda - \frac{\Omega_0 - 1}{a^2}\right)$$

a)

- Ω_0 . . . Density
- Ω_r . . . radiation density
- Ω_m . . . matter density (Dark + Baryonic)
- Ω_Λ . . . cosmological constant (vacuum density)

b)

$$H^2(t) = \left(\frac{\dot{a}}{a}\right)^2 = \left(\frac{\frac{\mathrm{d}a}{\mathrm{d}t}}{a}\right)^2 \quad \Rightarrow \quad a^2 H^2(t) = \left(\frac{\mathrm{d}a}{\mathrm{d}t}\right)^2 \quad \Rightarrow \quad \mathrm{d}a = \frac{\mathrm{d}t}{aH(t)}$$

$$\int \mathrm{d}t = \int \frac{1}{aH(a)}\,\mathrm{d}a$$

c)