Cosmic Evolution

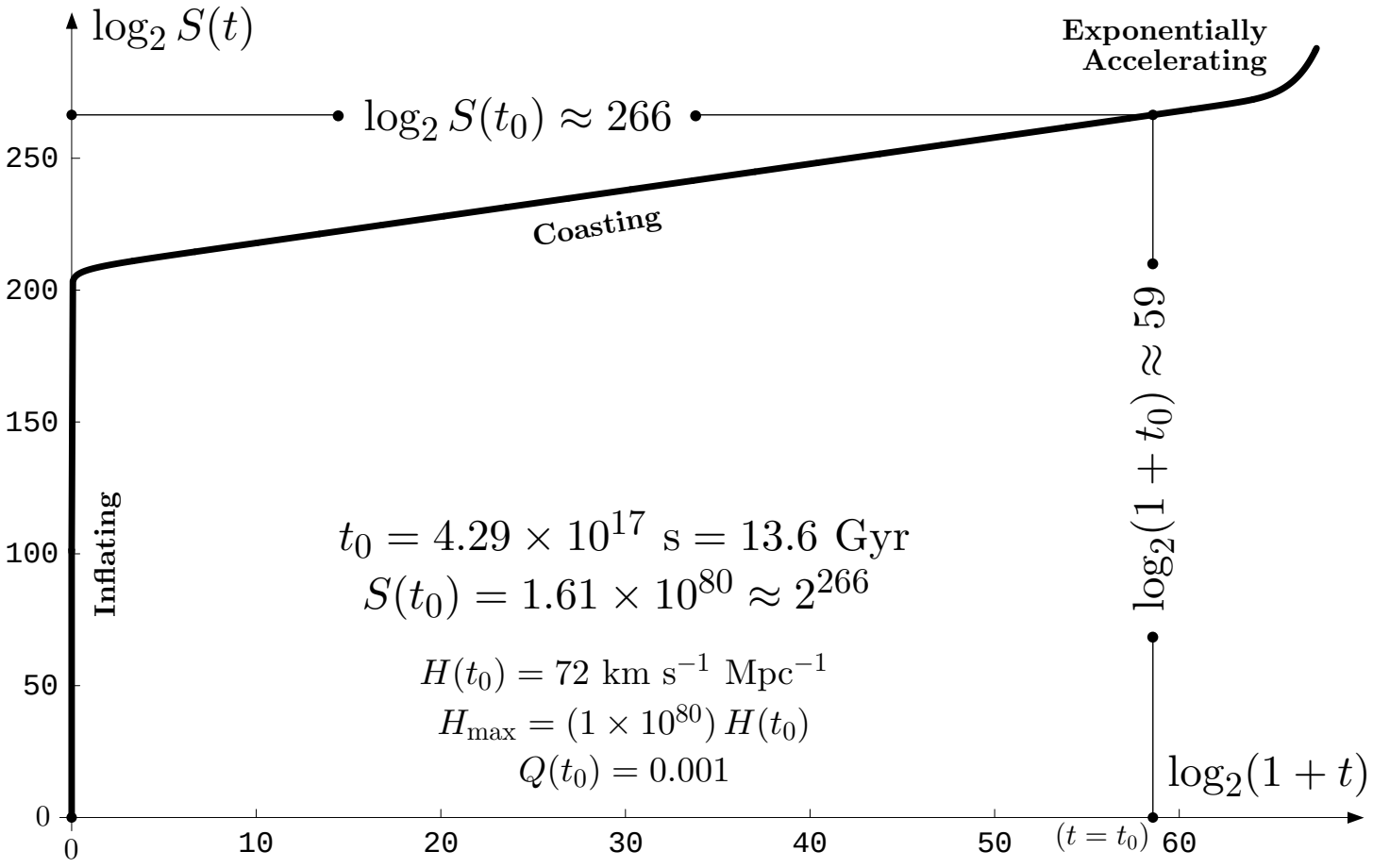

Figure 4: Graph of $\log_2 S(t)$ versus $\log_2(1+t)$ for the sample solution of Appendix A. The early stage rapid inflation, after producing approximately 207 doublings of the normalized scale factor S in the first second after the bounce, gives way to a long period of uphill 'coasting' (where the graph is nearly linear), followed by a return to exponential acceleration after $t = t_0$. In the coasting period $\log_2 S(t) \approx 207+((266-207)/(59-0))\log_2(1+t) = 207+\log_2(1+t)$, so $S(t) \approx 2^{207}(1+t)$, making the expansion essentially linear with time.

- $S(t) = 1$ when $t = 0$ (time of the 'big bounce').
- $S(t) = 1.61 \times 10^{80}$ when $t = t_0$ (time of present epoch).
- H = Hubble parameter = $\dfrac{\dot{S}}{S}$.
- Q = acceleration parameter = $\dfrac{\ddot{S}/S}{(\dot{S}/S)^2}$.

Taken from Cosmic acceleration, inflation, dark matter, and dark 'energy' in one neat package, by H. G. Ellis.