PHYS 600 : HW 1

This HW is just to warm up on numerics and plotting.

You should add any code you write, and the plots you generate into your Github repository for this class.

Problem 1

Consider the integral

$$\int_0^z \frac{dz}{\left[\Omega(1+z)^3 + (1-\Omega)(1+z)^{3/2}\right]^{1/2}}$$

where Ω is a parameter between 0 and 1. Note that this integral defines a function of z.

Write code to numerically integrate this integral for a given value of Ω and z. Plot the result as a function of z (between $0 < z < 1$) for $\Omega = 0, 0.3, 0.7, 1$. Make sure to label the axes of your plot.

Also include on your plot the analytic results for $\Omega = 0$ and $\Omega = 1$.

You can use any approach to integrate the function that you like (i.e. you do not need to write the integration routine from scratch).