Ay190 – Worksheet 11

Xiangcheng Ma

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Poisson Equation

(1) The density profile of the given star is showed in Figure 1.

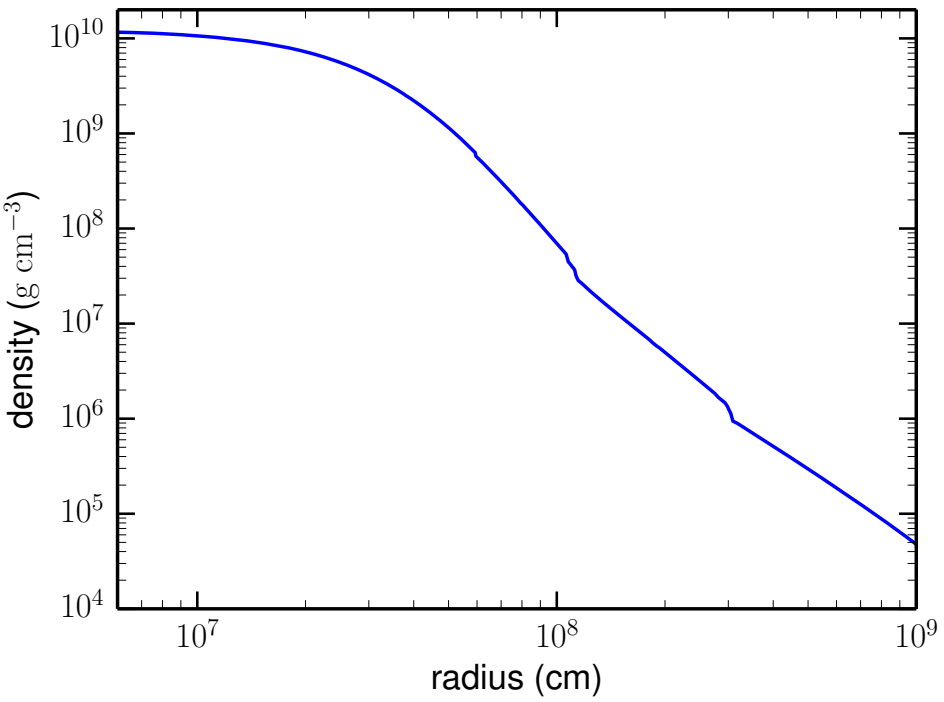

Figure 1: Density Profile

(2) The grid is set up from 6×10^6 cm to 10^9 cm. I use the `numpy.interp` routine to do the interpolation.

(3) A Euler intergrator has been implemented. I use a uniform density spread a radii from 0 to 10^5. The comparison is showed in Figure 2. The difference results in the error of Euler integration outward to the most outer radius.

The potential of the given star is plotted in Figure 3.

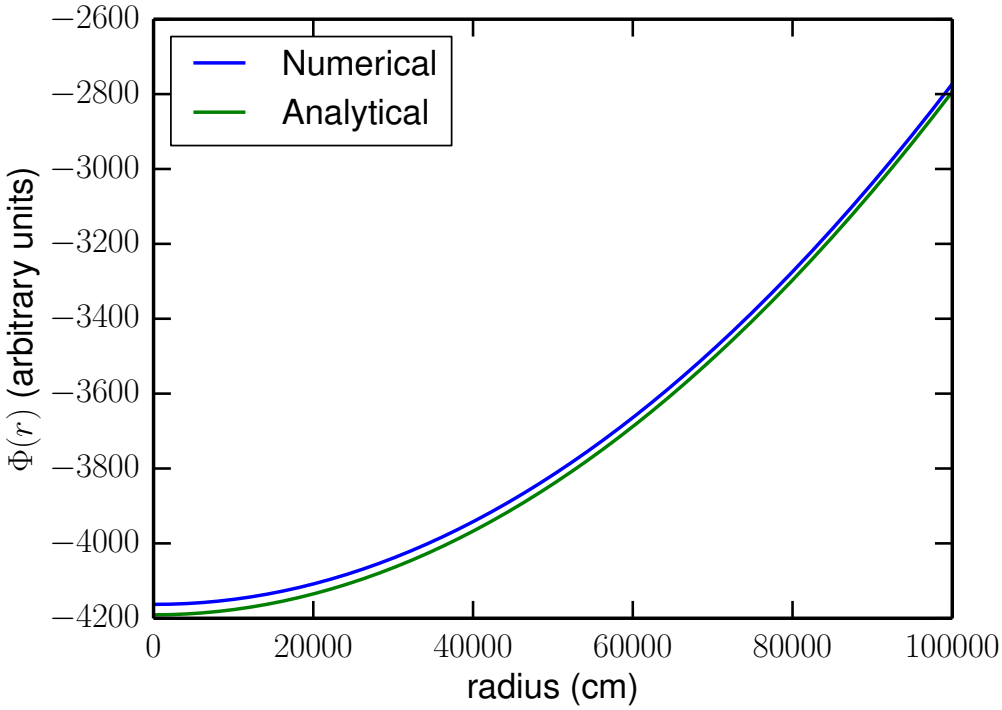

Figure 2: Uniform Density Test

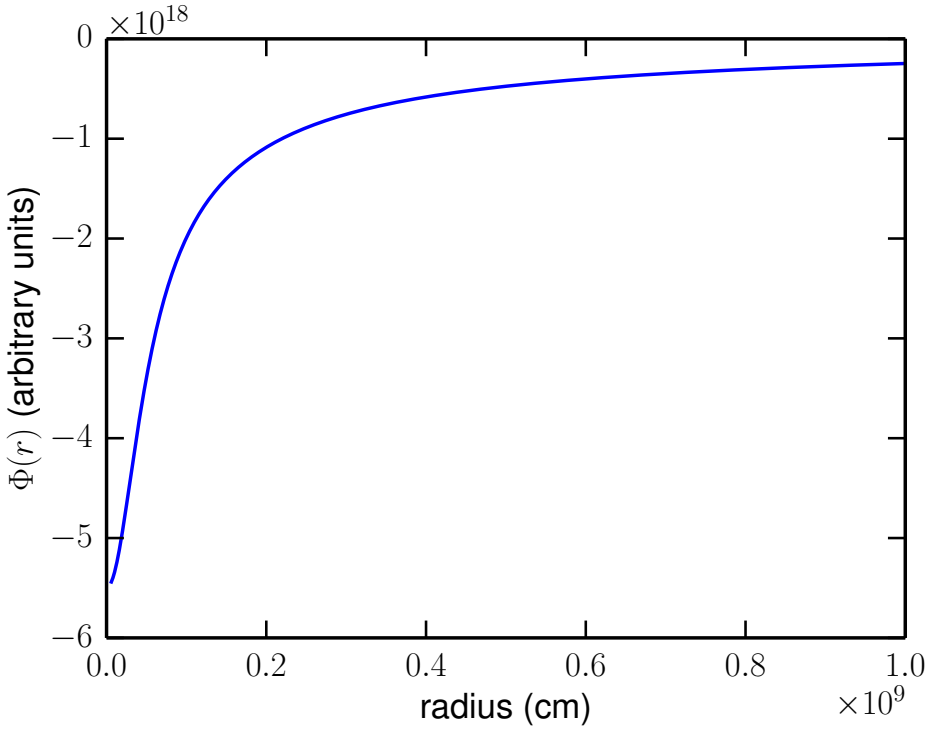

Figure 3: Potential of the Star