Homework 4 Write-up

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1 question 1

For the central densities in the range $10^4 - 10^6 [g/cm^3]$ and using the Runga-Kutta solver on the hydrostatic equilibrium equations, the Mass and Radius of the white dwarf stars can is found then compared to each other.

2 question 2

For this question, the Neutron star equations were solved through the RK4 solver just like question 1 and are compared to each other at the different central densities in the range $10^{14} - 10^{16} [g/cm^3]$

3 question 3

Using the same process and TOV equations in question 2, the exact mass of the neutron star J0030+0451 with a radius of 13.02[km] can be easily found. At different central densities the mass would follow the same Mass-Radius curve as in question 2.