Phys 735 – Gravitational Physics
Homework Assignment #1. Due Friday, September 2, 2022

In your solutions to the following problems, please include full sentences explaining your reasoning. Any step that is not an obvious mathematical manipulation should come with a short explanation, or the solution will not be considered complete.

1. Tidal forces:

A meter stick of mass 200 g is in free fall near the surface of the Earth. The meter stick is oriented vertically. Integrate the expression for the tidal force along the meter stick and thereby find the exact value of the tidal "tension" at the midpoint of the meter stick.

2. Carroll, Chapter 1, Exercise 5.

3. Carroll, Chapter 1, Exercise 6.

4. Carroll, Chapter 1, Exercise 7.