PHYS 314
HOMEWORK #3

Due : 8 Feb. 2017

1. A uniform chain of mass M, length L and density λ (measured in kg/m) hangs so that its bottom link is just touching a scale. The chain is dropped from rest onto the scale. What does the scale measure at the moment the last link hits the scale?

2. Text, problem 11, p. 91

3. Text, problem 12 p. 91

4. Text, problem 36, p. 95.

5. Suppose the moon is stopped in its orbit at a distance r_o from the Earth and begins to fall inward. Determine the time it will take for the moon to crash into the Earth. Depending on how you approach this problem, you might encounter an integral where the substitution $r = r_o \sin^2\theta$ is useful. Look up the values of the appropriate astronomical parameters (mass of Earth, average distance of moon from Earth, etc.) and calculate the time it will take for the moon to hit the Earth.