$$110\text{a Homework 4, due Nov. 7.}$$

1. Taylor 7.14.

2. Taylor 7.20.

3. Taylor 7.36, parts (a) and (b) only.

4. Taylor 7.41. Write down the Lagrangian, and also the conserved quantity associated with $\frac{\partial L}{\partial t} = 0$, all in terms of the single coordinate ρ (and $\dot{\rho}$). The equilibrium / stability part of the question is optional.

5. Taylor 7.48. (I argued for this in class based on the action changing only by irrelevant boundary contributions. Here you're asked to verify it directly from the E.L. equations.)

6. Taylor 7.49, parts (b) and (c) only. (Just go ahead and use $\vec{A} = \frac{1}{2}B\rho\widehat{\phi}$ – you don't need to bother proving that.)

7. Taylor 7.50.

8. Taylor 7.52.