PHYS 251 HONOURS CLASSICAL MECHANICS 2014
Homework Set 2

READINGS: Text, pp. 51 - 70, class notes *Notes on Dynamical Systems* on the web.

PROBLEMS (due Sept. 12, in class):

1. Read Section 3.2 in the textbook and write a summary of the most important points in LESS than a page.

2. Problem 3.2 (textbook) (*)

3. Problem 3.6 (textbook) (*)

4. Exercise 3.30 (textbook)

5. Exercise 3.33 (textbook)

6. Essay question: a) What is Newton's absolute space? b) Is the concept of Newton's absolute space compatible with Newton's Third Law? (not more than 1 page).

7. Assume that F1 is an inertial frame, and that the frame F2 is moving with constant velocity relative to F1. Show that F2 is also an inertial frame.

8. Given a single particle moving in one dimension under the influence of a force

$$F(q) = -sin(q)cos(q),$$

construct a sketch of the phase space diagram of the flow of this dynamical system.

Note: Problems marked * do not need to be handed in.