MATH10232: EXAMINATION FEEDBACK (2014/15)

The overall performance on the exam was very good, with about 42% of students obtaining a first class mark and about 83% a mark better than 2(ii). The questions were mostly straightforward, and the format in line with that previous exams; hence the students seem to have been well prepared. In general, the last two questions (on mechanics), questions 5 and 6, were less well treated than other questions.

Common mistakes included:

- Solving the ODE system in question 3.
- Derivation of the energy equation in question 5.
- Obtaining the relevant ODEs and solving them in question 6, especially subquestions (c) to (e).

Specific comments related to individual questions:

Question 1 This is a standard question aimed at testing the student ability to recognise and solve classical types of ODEs. In general well done, except for algebraic mistakes. Please, check that the solutions obtained do satisfy the equations and the initial/boundary conditions if any.

Question 2 This was an easy question, but some students implicitly assumed that the parameter $r$ is positive, while no such assumption needed to be made.

Question 3 This question is similar to what was done in the lectures, and many students got full mark by following the simple methodology taught. Also some algebraic errors were encountered.

Question 4 The definition of a plane autonomous system seems to be not well understood by some students. Also, some of the fixed points were missed.

Question 5 This is a standard question, with similar ones having been treated before the exam. However, some students failed to provide a correct derivation of the energy equation in subquestion (a), as well as a correct plot of the potential $V$ which was needed for the remaining questions.

Question 6 Some students failed to perform correctly the cross product, and to answer subquestions (c) to (e).