Suggestions for homework and the like

Here is a list of suggestions, based on things I have noticed over the course of this quarter. You might find some of these useful in the future.

1. "Show" means take the equation you know and derive the result in the question. Not go from the result back to the known equation – that corresponds to "verify".

2. If a question has an answer in terms of square roots, then it must be possible to find it by hand. You can work out its numerical value later. Maple or mathematica may or may not get it – it all depends on whether you can formulate the problem in a simple way (see 3).

3. It's almost always easier to differentiate equations with respect to a parameter than complicated square roots and so on. If you're not sure how to do this, ask me.

4. Always look at previous homework and midterms if they're available. It's quite possible the current questions are similar to previous years' questions.

5. Ditto when it comes to reviewing for an exam.

6. Don't write out the questions. I set the questions so I know what they are, and I have the book. Save paper. No partial credit is given for writing out questions.

7. ω is not the same as w.

8. If the question looks wrong, it might be wrong. It's one thing to try and find mistakes in your work, it's another to do bogus mathematics to get the answers to match. See also 1: if you're going backwards and the question is wrong it's never going to work out.

9. Try not to write down things that are mathematically or logically wrong. If a question requires $a = 0$, then don't use $a = 1$ in it (this sounds ridiculous but it has happened).

10. Check your answers. If you've found the root of an equation, verify it numerically, say in matlab.