

How to work a problem at the board

Over the course of the semester, you will have several opportunities to lead a discussion of a particular homework problem at the board. Your performance will be graded according to the attached rubric, but some additional notes may help you as you prepare for these opportunities.

- **Always start the problem with a reference.** Tell us which problem you're solving. This may seem unnecessary; we're all in the same class, after all, and ought to know what's going on. It is sometimes the case, however, that one or more of us will be distracted enough before or at the beginning of class that this small step will be appreciated.
- **Always give a synopsis of the problem.** This doesn't mean you should always read the problem text as given, but you do need to give us enough information to remind us what we're looking at.
- **Prepare.** In addition to working the problem before coming to class, you should think (at least a little) about how you might present it. Further, you should work the problem enough in advance of class that you can get help from your peers or from me if necessary.
- **Use board space well.** Write legibly. Try not to block what you're writing. Draw appropriate pictures (or refer to figures in the text).
- **Talk to the class, not the board (or the instructor).** This doesn't just mean that you ought to face the class when speaking most of the time, but that you have a responsibility when you're at the front of the room to make sure that everyone is following you. If people look puzzled or concerned, ask them what's bothering them. You may have made a mistake, or there may be something you can elaborate on which will help them understand better.
- **Articulate the physics present in the problem.** Some problems will have a lot of obvious physics in them, while others will appear to be mostly math. Try to establish some relevance, especially for these latter problems. When might the math be useful? What are the applications? What is the motivation?
- **Explain the math.** Don't just work the math; explain what you're doing. Verbal descriptions of even simple steps can help the class follow what you're doing on the board (*i.e.*, "next we collect terms..."). If there is some special technique or trick which is important to the problem (*e.g.*, "here is where we make use of orthogonality...") make special note of it.
- **Ask for questions or other input.** Soliciting input at the end of a problem is always good practice. It's also helpful to ask for questions or comments if a particular step is tricky or gave you trouble.