Final Exam  
Ph 135, Fall 2019

Instructions:

• This exam must be taken in one sitting over the period of 5 hours from start to end. Please note on the top of your solution the starting and finishing time.

• The exam contains four problems. To obtain a perfect score you need to answer only three out of the four problems. If you tackled more than 3 problems, indicate in the beginning of your exam which problems we should grade.

• You may use any personal notes, course hand-outs, and two books of your choice during the exam. Note the textbooks you are using in your solution. A computer math program is not necessary, but if you feel the need to use one (mathematica, matlab, maple, etc.), it is allowed.

• If you need to make any assumptions due to lack of information in the text, specify clearly your assumptions.

• Your solution is due by email to Swati jschaudha@caltech.edu, cc’d to Gil, refael@caltech.edu, by Monday, Dec. 16th, 5pm.

• Do not discuss the exam with your colleagues before your solution and theirs is handed in.