Some resources I found useful when taking FCM and preparing for the qualifying exam. Please be aware these are only suggestions/resources I found useful when I took the exam - I have no knowledge of the exam you will be taking. My best advice is be able to complete the HWs without looking at the solutions. It is good to go through the slides, but if you don't understand something, don't get bogged down on trying to prove it from just the info on the slides - either look up other resources (hopefully below) or move on for now. Also, remember to dedicate to study both semesters of FCM. It is easy to begin studying FCM I and feel like you don't have time to start studying FCM II, but you'll be better off learning something about everything rather than everything about something.

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FCM 1

- Linear Algebra - Perhaps a good warm up would be able to prove each of the results listed on slides 31-33 of Set 27 of FCM II, except the last one about eigenvalues.
- Floating Point Arithmetic - The University of Washington offers a free online course called "The Hardware/Software Interface" on Coursera, and has several excellent video lectures on floating point numbers. You'll need to create a free account, then search for and enroll in the course. Once enrolled, go to the course homepage and on the left menu, click "Video Lectures". The floating point lectures are in "Section 2: Integer and Floating Point Numbers."
- Eigenvalues, Positive Definiteness - Prof. Gilbert Strang's lectures from his Computational Science and Engineering course are available at MIT OCW. I found lectures 5-7 (Eigenvalues & Positive Definite Day) very helpful.
- Solving Nonlinear Equations (Newton's Method, e.g.) - mathematicalmonk's YouTube videos are like KhanAcademy for grad students. The link is for a video tutorial of Newton's method, but he has a plethora of videos on a wide range of numerical topics in his library (click his username beneath the video to see/search them).

FCM II

- Functional Approximation - Dr. Doron Levy at UMD has some good notes on approximations in function spaces here. These are a much more expanded version of Set 12.
- Fourier Transform/DFT/FFT - Again, Prof. Gilbert Strang's lectures are unbeatable. Lectures 28-34 at MIT OCW.

- Runge-Kutta, Splines, other - numericalmethodsguy has some good video lectures on YouTube as well. The link is to a RK video, but click his username to see a lot more.
- Quadrature - Be able to prove the Newton-Cotes quadrature errors given in the text (I think it's around p. 380).