1. Read Griffiths sections 4-1 and 4-2. Did you read all the pages?

2. (a) Numerically solve the S.E. for the one-dimensional quantum simple harmonic oscillator (SHO) potential as a warmup. You know what the exact energy eigenvalues are. This will ensure that your code is correct. Use the first-order Euler method and leave the stepsize fixed at 0.01, but you may use any programming language and any plotting program.

   `http://www.physics.smu.edu/scalise/P5382fa15/NumericalSHO.nb`

   (b) Change the dimensionless potential from u^2 to u^4 and find the lowest two energy eigenvalues to at least 4 decimal places.

3. Numerically solve the S.E. for the one-dimensional finite square well with a bump in the bottom. Find the three lowest energy eigenvalues to at least 4 decimal places and sketch the corresponding wavefunctions. Use the first-order Euler method and leave the stepsize fixed at 0.01, but you may use any programming language and any plotting program.

   `http://www.physics.smu.edu/scalise/P5382fa15/NumericalSE.nb`

Bonus:

1. Write pseudocode for the numerical solution of the SHO but using RK2 or RK4.

2. How many bound states are there for the third problem above? What are their energies to at least 4 decimals?