1.2)

1. Code in RCCircuit.

2. As h gets smaller, the time between each step gets smaller. This doesn’t make it any less accurate – it just means there need to be more iterations. As h get larger, the time between each gap gets larger, so it looks as if the capacitor starts with V\_C = V\_in even though it doesn’t. This occurs because the time step is too large to observe what is occurring. Charging behavior itself doesn’t change, but perception of it does. Theoretical charging curve looks almost the same as LDS curve with a good choice of h.

3. tau = RC, the time constant quantifies how long it takes to charge the capacitor.

2.2)

1. Code in RLCircuit.

2. Steady state voltage across capacitor after it is fully charged is equal to V\_in. Steady state voltage across inductor after it is fully charged is equal to 0. Steady state current across capacitor after it is fully charged is equal to 0. Steady state current across inductor after it is fully charged is equal to as if it were a wire/closed circuit – essentially, I=V/R.