EE 322 Advanced Electronics, Spring 2013
Homework #3 assignment

1. Plot, to scale, the voltage across, and current through the inductor of a step-down switching voltage regulator with $V_{\text{in}} = 10\,\text{V}$ and $V_{\text{out}} = 3\,\text{V}$

2. If the cycle-averaged input current is $1\,\text{mA}$, what is the cycle-averaged output current?

3. If the cycle frequency is $10\,\text{kHz}$ what are T_C and T_O in continuous mode?

4. What size inductor current will cause the current to vary by $100\,\text{mA}$ during a cycle?

5. To obtain continuous mode operation to a load current of $10\,\text{mA}$, what size inductor is required? Is this a minimum or maximum inductor size for that operation?

6. For that same inductor what is T_C which results in a $1\,\text{mA}$ current?

7. Plot, to scale, inductor voltage and inductor current which results in one third the output current of the minimum continuous mode output current.