

Physics 4820

Midterm I, Outline

Winter 2019

1. Question with a simple circuit, and using Laplace transforms to find the transient behaviour. I can't resist this type of question because it's such a nice application of the technique. Past classes have had trouble setting up the boundary conditions (ie. $i(0)$ and $q(0)$ on various circuit components) so with that in mind I've added description so that the circuit knowledge required is very basic AND, I've given you the differential equation you need to solve. Still, I'll ask you to make sure you know the equations for voltage across a resistor, capacitor, an inductor.
2. Laplace property question. Derive one of the properties and then apply it to a given function.
3. Delta function question. Something about basic properties of delta functions and delta sequences. Use a delta sequence to demonstrate a characteristic of the delta function.
4. An application of Laplace transform to demonstrate a mathematical relationship. (This is something completely different ...).