

Physics 263: BTM Problem Set #1

This assignment is designed to give you practice in the basic tasks from Chapter 1 in BTM, which we'll need repeatedly and build upon. Please ask questions! It is due by 5:30pm in the box in 1011 on Friday, March 31.

1. **BTM Problem 1.2.2.** Showing this “from first principles” means starting with the definition of a derivative in Eq. (1.2.3).
2. **BTM Problem 1.3.2.** Remembering (or learning!) the Taylor series. The first three terms must be part of your “instinctive math” database.
3. **BTM Problem 1.5.2.** Basic analysis of a function to produce a graph (by hand!). Use the behavior for $x \rightarrow \pm\infty$, find the zeros and where it blows up (if anywhere), then connect the regions.
4. **BTM Problem 1.6.2.** Practice examples using the building blocks for derivatives. Practice these until you can do them fast without much thought.
5. **BTM Problem 1.6.5.** This is the only synthetic problem here, which puts together various pieces in a physics context.