

Math 30820: Honors Algebra IV

Problem Set 1

1. Artin, §12.2, Problems 2.1, 2.4, 2.6, 2.9, 2.10. For 2.1, make sure to justify your answer. For 2.9 and 2.10, I don't know if you have done the exercises they refer to, so it might be helpful to do those exercises yourself to get up to speed on these rings (but there is no need to write them up or turn them in – just write up 2.9 and 2.10).
2. (Extra credit): Let $I \subset \mathcal{C}(\mathbb{R})$ be the set of all continuous functions $f: \mathbb{R} \rightarrow \mathbb{R}$ such that $f(0) = 0$. Prove that I is a non-finitely generated ideal. Half credit for just showing that it is not principal (i.e., generated by a single element).