

Math 553, Lesieutre
Problem set #7
due March 11, 2016

1. II.7.3
2. II.7.5
3. (a) Give an example of a linear system on \mathbb{P}^3 with 1-dimensional base locus.
(b) Give an example of a *complete* linear system on a smooth 3-dimensional variety with 1-dimensional base locus.
(c) Give an example of a *complete* linear system smooth 3-dimensional variety with 2-dimensional base locus.
4. Describe the blow-up of \mathbb{A}^2 at the ideal \mathfrak{m}_0^k . What are the fibers of the map down to \mathbb{A}^2 ?
5. Suppose that $\phi : X \rightarrow X$ is an automorphism of a variety over \mathbb{C} , and that \mathcal{I} is an ideal sheaf fixed by ϕ^* . Show that ϕ induces an automorphism of the blow-up of X along \mathcal{I} .
6. II.7.12