Math 254B. Homework #4

Due Tuesday, 19 February

1. The proof of Lemma 2 in class last week (February 5 and 7) was incorrect. Find a serious gap in the proof (you do not need to fix it—just find and describe it). You may not discuss this problem with anyone else.

2. Show that Lemma 2 is false without the subscheme $X$. In other words, with notation as in the lemma, show that $h_k(\phi(P)) - h_k(P)$ is unbounded as $P$ varies over $(\mathbb{P}_k^n \setminus V)(\overline{k})$. 