HWK #7, DUE WEDNESDAY 4/7

1. Hartshorne: Chapter II, 6.1, 6.4, 6.5, 6.6.
2. Let $C^3_0$ denote the space of curvilinear schemes supported at the origin of $\mathbb{A}^2_k$. The natural morphism

$$\pi: C^3_0 \longrightarrow C^2_0 = \mathbb{P}^1_k,$$

realises $C^3_0$ as a line bundle over $\mathbb{P}^1_k$. Identify the corresponding invertible sheaf, up to isomorphism.