

## Math 256A. Problem Set #9

Due Thursday, 5 November

1. Let  $X$  be a scheme. Let  $U$  and  $V$  be open affine subsets of  $X$ , with isomorphisms  $\phi: U \rightarrow \text{Spec } A$  and  $\psi: V \rightarrow \text{Spec } B$ . Then for all  $P \in U \cap V$  there exists an open neighborhood  $W$  of  $P$  in  $U \cap V$  and elements  $f \in A$  and  $g \in B$ , such that  $\phi(W) = D(f) \subseteq \text{Spec } A$  and  $\psi(W) = D(g) \subseteq \text{Spec } B$ . Thus  $U \cap V$  is covered by *common* principal open subsets. [Do *not* assume that  $X$  is separated—we haven't covered that yet.]
2. Exercise 2.3.
3. Exercise 2.4.
4. Exercise 2.8.
5. Exercise 2.15.