Algebraic geometry : HW 6

1. Prove that if B is a domain, then B is the intersection inside the quotient field of B of the localizations of B at maximal ideals of B.

2. Let R be a ring (commutative with identity). Recall that Spec$R$ denotes the set of prime ideals of R, and if $\mathfrak{a}$ is an ideal of R, then $V(\mathfrak{a})$ is the set of all prime ideals of R that contain $\mathfrak{a}$. Prove that taking the closed subsets to be $V(\mathfrak{a})$ for all ideals $\mathfrak{a}$ gives a topology on Spec$R$.