Algebraic geometry : HW 12

1* (bonus). Let A be a ring and let $\mathfrak{p}$ be a prime ideal of A. Show that we have an isomorphism from $A_{\mathfrak{p}}/\mathfrak{p}A_{\mathfrak{p}}$ to the quotient field of $A/\mathfrak{p}$ that takes $(a, s) \in A_{\mathfrak{p}}$ to a/s.