

Let R be a commutative ring, $I \subseteq R$ an ideal, and $\mathfrak{p} \subset R$ a prime ideal.

	algebraic description	geometric meaning
$\text{Spec } R$		
\mathfrak{p}		
$\mathbb{V}(I)$		
$\text{Spec}(R/I)$		
$R_{\mathfrak{p}}$		
$\text{Spec } R_{\mathfrak{p}}$		

(1) Describe the Laurent polynomial ring $\mathbb{C}[s^{\pm 1}]$ as a localization. What are the points of the *algebraic torus* $\text{Spec } \mathbb{C}[s^{\pm 1}]$?

(2) We will write points in \mathbb{P}^1 as $(x : y)$, where x and y are not both zero and $(x : y) = (\lambda x : \lambda y)$ for $\lambda \in \mathbb{C}^*$. A torus action on \mathbb{P}^1 is given by $s \cdot (x : y) \mapsto (x : sy)$. What are the orbits of this action?