

Quasi-affine schemes

For which of the following rings is $(6, 15)$ a point of the \mathbb{Z} -quasi affine scheme $A(x, y ; ; x, y)$?

Note that \mathbb{Z}_n is the ring $\mathbb{Z}[x]/\langle nx - 1 \rangle$ for a non-negative integer n .

(Hint: Use patching or use the definition directly.)

1. \mathbb{Z}
2. \mathbb{Z}_2
3. \mathbb{Q}
4. \mathbb{Z}_3
5. \mathbb{Z}_6
6. \mathbb{Z}_5
7. \mathbb{Z}_0

We want a ring in which $\langle 6, 15 \rangle$ is the unit ideal.

Note that $\langle 6, 15 \rangle$ is the ideal $\langle 3 \rangle$ in \mathbb{Z} .

The image of this ideal is the unit ideal *only* in the rings \mathbb{Q} , \mathbb{Z}_3 and \mathbb{Z}_6 and \mathbb{Z}_0 .
(Note that $\mathbb{Z}_0 = \{0\}$!)