

height of a prime ideal*

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Let R be a commutative ring and \mathfrak{p} a prime ideal of R . The *height* of \mathfrak{p} is the supremum of all integers n such that there exists a chain

$$\mathfrak{p}_0 \subset \cdots \subset \mathfrak{p}_n = \mathfrak{p}$$

of distinct prime ideals. The height of \mathfrak{p} is denoted by $h(\mathfrak{p})$.

$h(\mathfrak{p})$ is also known as the rank of \mathfrak{p} and the codimension of \mathfrak{p} .

The Krull dimension of R is the supremum of the heights of all the prime ideals of R :

$$\sup\{h(\mathfrak{p}) \mid \mathfrak{p} \text{ prime in } R\}.$$

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