



### Definition

A cone  $K \subset \mathbf{R}^n$  is *proper* if it is (a) convex, (b) closed, (c) solid, and (d) pointed. A cone is solid if its interior is nonempty. A cone is *pointed* if it contains no line.

$$x \in K, -x \in K \Rightarrow x = 0.$$

In this case, we call  $K$  *proper cone*.

### Example

The nonnegative orthant is a proper cone.



