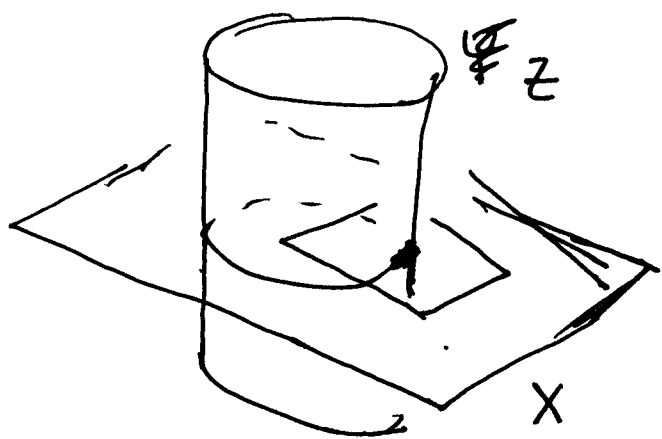


These are examples of the most useful case of transversality:

⑥



$X$  is a submanifold of  $Y$

$f$  is the inclusion map

$$X \xrightarrow{f} Y$$

$df: T_x X \rightarrow T_x Y$  maps  $T_x X$  into the appropriate subspace of  $T_x Y$ .

In this case:

$X$  and  $Z$  are transverse if  $T_x X + T_x Z = T_x Y$  for all  $x \in X \cap Z$ .

We write  $X \pitchfork Z$ .

Theorem. If  $X \pitchfork Z$ , then  $X \cap Z$  is a submanifold of  $Y$ . Further,  $\text{cod } X \cap Z = \text{cod } X + \text{cod } Z$ .

# Examples.

