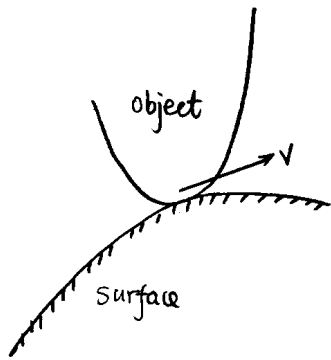
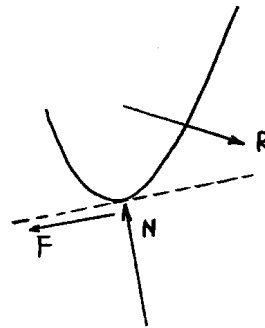


# TAM 202 Spring 03 Comments on friction



$v$  = direction of slip of that object relative to whatever it slides on.

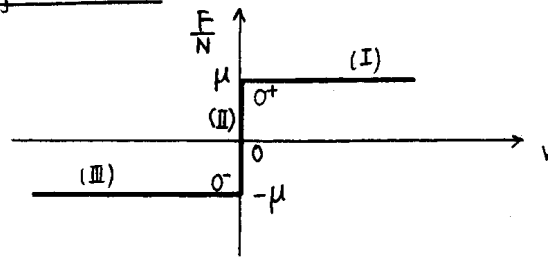
## FBD



$N$  = normal force on sliding object  
 $F$  = friction force on sliding object  
 $R$  = other load on sliding object

Note: For the equation  $F = \mu N$  to be valid, the assumed direction of  $F$  needs to be opposite the direction of slip. For the three cases below to make sense, the positive  $v$  direction must be opposite the positive  $F$  direction.

## Determination of friction $F$



(I)  $v \geq 0^+$

$F = \mu N$ : direction of friction is opposite to the slip or impending slip.

(II)  $v = 0$

$|F| \leq \mu N$ : determine  $F$  from statics, i.e.  $\underline{F} + \underline{N} + \underline{R} = 0$ .

(III)  $v \leq 0^-$

$F = -\mu N$ : direction of friction is opposite to the slip or impending slip.