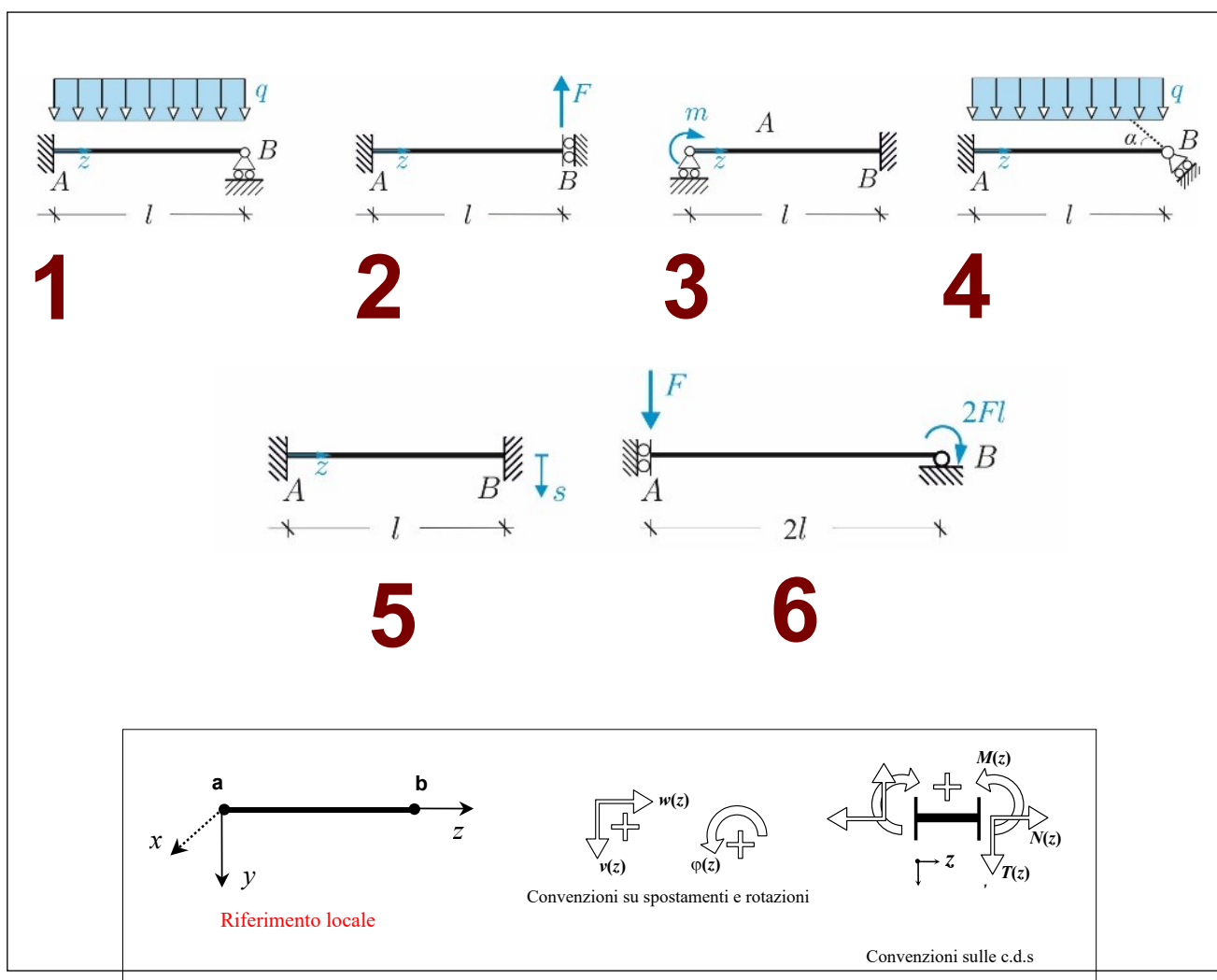


**(E15) –Linea elastica**

**Problemi 1-6.** Per ciascuna delle *travi indeformabili a taglio* ( $\gamma=0$ ) riportate in figura: **a)** scrivere le equazioni della linea elastica con le rispettive condizioni al contorno; **b)** disegnare qualitativamente la *deformata* della trave; **c)** determinare le leggi di variazione dei campi di spostamento e tensione e tracciare i relativi diagrammi. Si assumano uniformi le rigidezze con  $EA=EI/l^2$ . Si ricorda che:  $N=EAw'$ ,  $T=-EIv'''$ ,  $M=-EIv''$ .



The figure shows six beam problems (1-6) and a legend for sign conventions. Problems 1-4 are beams of length  $l$  with supports at  $A$  and  $B$ . Problem 1: fixed at  $A$ , roller at  $B$ , distributed load  $q$ . Problem 2: fixed at  $A$ , fixed at  $B$ , point load  $F$  at  $B$ . Problem 3: fixed at  $A$ , fixed at  $B$ , point moment  $m$  at  $A$ . Problem 4: fixed at  $A$ , roller at  $B$ , distributed load  $q$ , and a small angle  $\alpha$  at  $B$ . Problem 5: fixed at  $A$ , fixed at  $B$ , point load  $F$  at  $A$ , and a small displacement  $s$  at  $B$ . Problem 6: fixed at  $A$ , roller at  $B$ , point load  $F$  at  $A$ , and a point moment  $2Fl$  at  $B$ . The legend defines the local reference system with  $x$  and  $y$  axes, and the  $z$  axis along the beam. It also shows conventions for displacements  $w(z)$ ,  $v(z)$ , and rotations  $\varphi(z)$ , and for internal forces  $M(z)$ ,  $N(z)$ , and  $T(z)$ .

COGNOME.....  
NOME.....  
MAT.....

PAGINA WEB DEL CORSO:  
[www.pcasini.it/disg/statica](http://www.pcasini.it/disg/statica)

Soluzioni: cap. 9, § 9.5-9.6 (4° edizione)