Università di Pisa - Scuola di ingegneria

Corso di Laurea in Ingegneria Civile, Ambientale e Edile

(Classe L-7 Ingegneria Civile e Ambientale)

SCIENZA DELLE COSTRUZIONI I

(6 CFU)

II anno

Docente : Stefano Bennati

COMPITI D'ESAME PARTE 2

2016 - 2017

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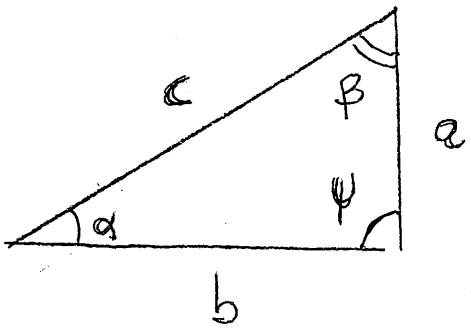


Lorenzo Casini 517355

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SENO

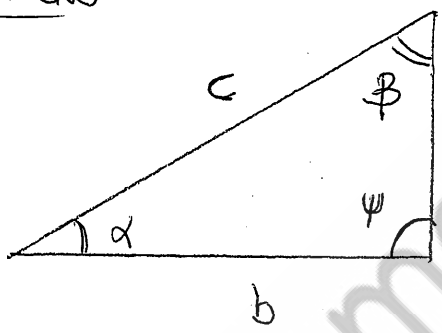


$a = c \sin \alpha$

$b = c \sin \beta$

CATETO
↓
IPOTENUSA PER SENO ANGOLO OPPOSTO

COSENO

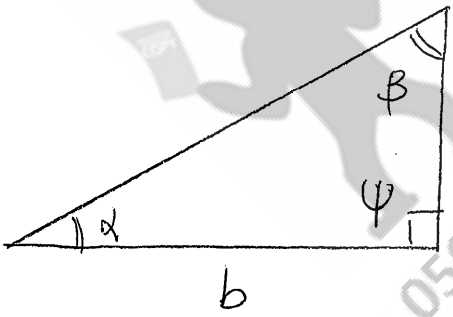


$a = c \cos \beta$

$b = c \cos \alpha$

CATETO
↓
IPOTENUSA PER IL COSENO ANGOLO COMPRESO

TANGENTE



$a = b \operatorname{tg} \alpha$

$b = a \operatorname{tg} \beta$

CATETO
↓
A. CATETO PER LA TANGENTE DELL ANGOLO OPPOSTO AL CATETO CERCATO

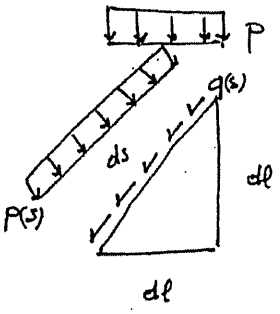
SPOSTAMENTI

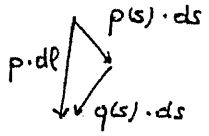
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FORMULARIO

Distribuzione carico assiale e trasversale





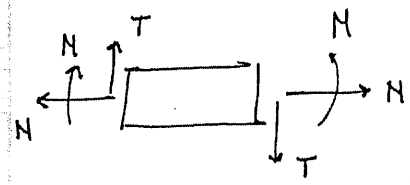
$$p(s)\cdot ds = \frac{\sqrt{2}}{2}\, p\cdot dl$$

$$q(s)\cdot ds = \frac{\sqrt{2}}{2}\, p\, dl$$

$$dl = \frac{\sqrt{2}}{2}\, ds$$

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Convenzione sui segni



Vincoli:

carrello	$w_x \neq 0$	$w_y = 0$	$\varphi \neq 0$	$R_x = 0$	$R_y \neq 0$	$M = 0$
bipendolo	$w_x \neq 0$	$w_y = 0$	$\phi = 0$	$R_x = 0$	$R_y \neq 0$	$H \neq 0$
doppio bipendolo	$w_x \neq 0$	$w_y \neq 0$	$\phi = 0$	$R_x = 0$	$R_y = 0$	$H \neq 0$
cerniera	$w_x = 0$	$w_y = 0$	$\phi \neq 0$	$R_x \neq 0$	$R_y \neq 0$	$M = 0$
incastro	$w_x = 0$	$w_y = 0$	$\phi = 0$	$R_x \neq 0$	$R_y \neq 0$	$M \neq 0$

Teo. Clapeyron

$$L_{v,e} = 2\, U_{el}$$

Gradi di libertà:



$w = 2(n-1)$



$w = 2n$



$w = 2n - 1$

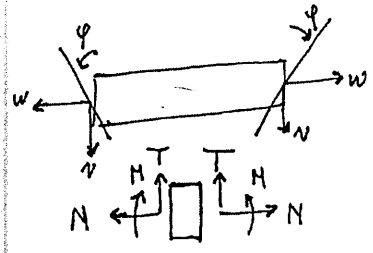
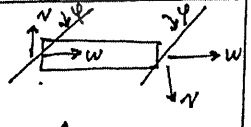
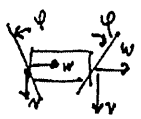
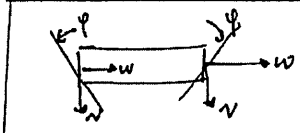
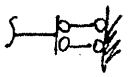
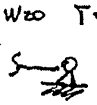
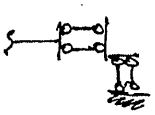


$3(n-1)$



$3(n-1)$

Simmetrie:

• assial-simmetria	assial-antisimmetrica	polar-simm	polar-antisimm
			
$\begin{cases} w=0 \\ \varphi=0 \end{cases} \quad \begin{cases} N\neq 0 \\ M\neq 0 \end{cases}$	$v=0 \quad T=0$	$v=0 \quad H=0$ $w\neq 0 \quad T=0$	$\varphi=0 \quad M=0$
			

→ INDIRIZZATI SECONDO LA LINEA DI SIMMETRIA

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