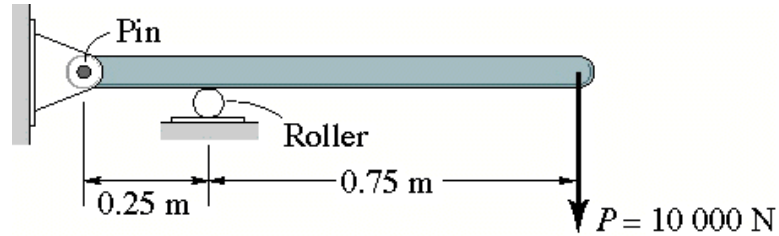


Diseño mecánico y estructural

Grado en Diseño de Producto
Guillermo Filippone

Determinación de solicitaciones

Cargas

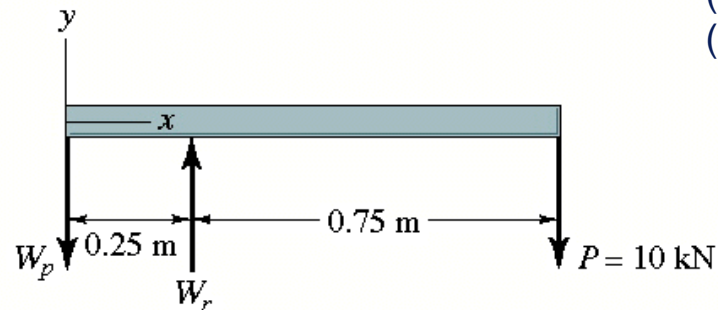


(a)

Viga simple

(a) Esquema

(b) Diagrama de cuerpo libre:
se reemplazan los apoyos
(vínculos) por fuerzas.



(b)

Basado en "Elementos de máquinas" HAMROCK, BERNARD J. et al.

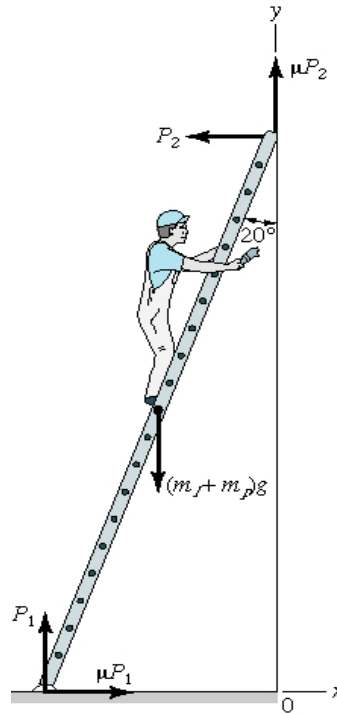
Reacciones

Condiciones de estabilidad:
SISTEMAS ISOSTÁTICOS

$$\sum F_x = 0$$

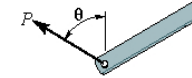
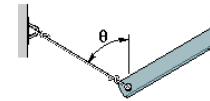
$$\sum F_y = 0$$

$$\sum M = 0$$



Type of support

Reaction



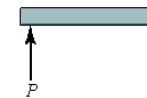
Cable

1 GDL

Cable



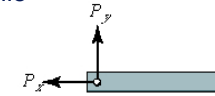
Roller



Rodillo



Pin

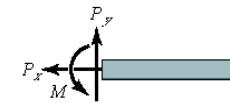


2 GDL

Articulación



Fixed support

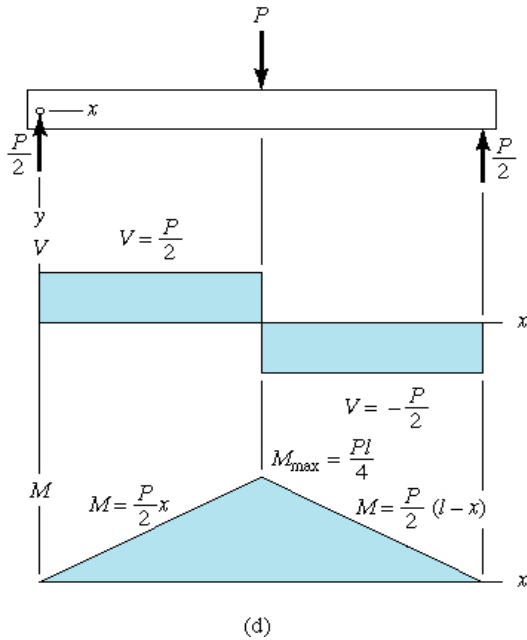


3 GDL

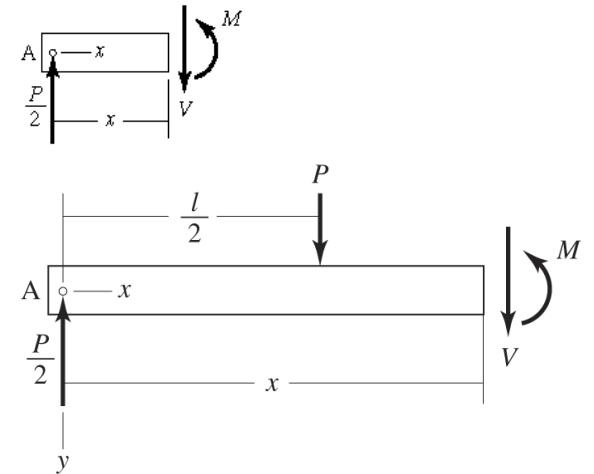
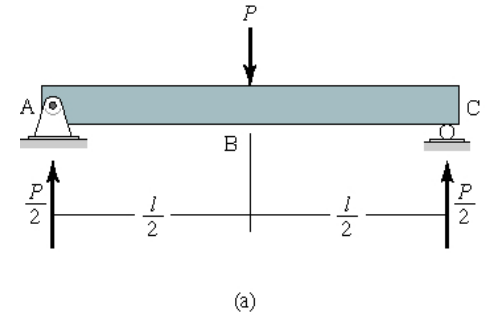
Empotramiento

Tipos de apoyos y reacciones

Diagramas de cargas

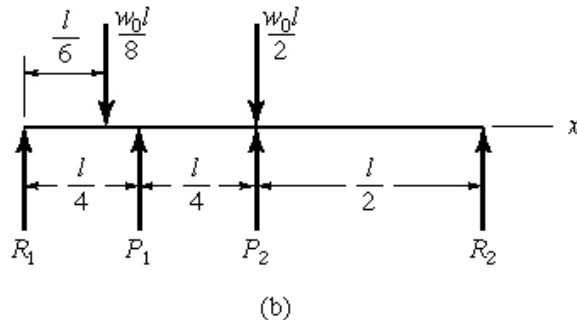
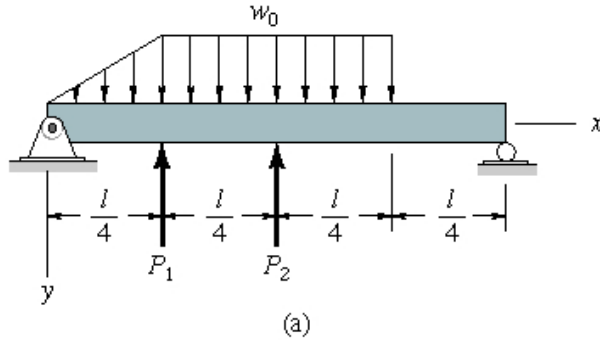


Barra simplemente apoyada
 (a) Esquema;
 (b) Diagrama de cuerpo libre para $0 < x < l/2$ y (c) para $l/2 < x < l$;
 (d) Diagramas de corte y momento.



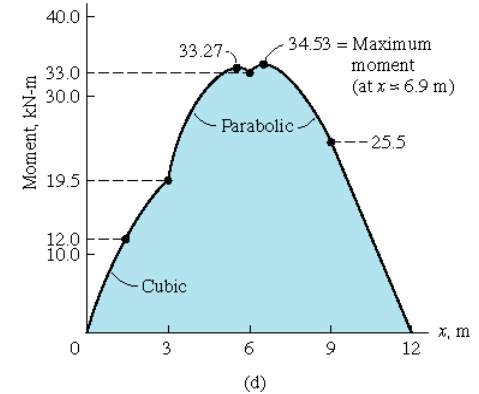
(c) Guillermo Filippone

Diagramas de cargas

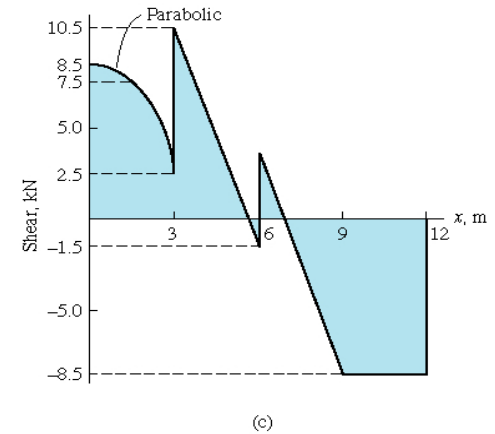


Viga simplemente apoyada con diferentes tipos de cargas

Diagramas:
Momentos

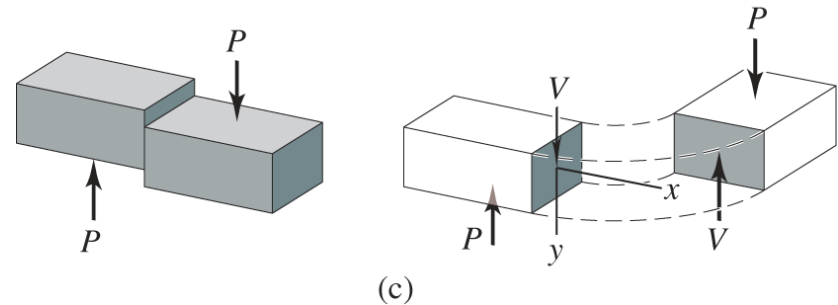
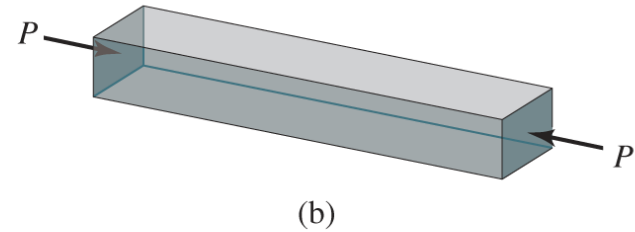
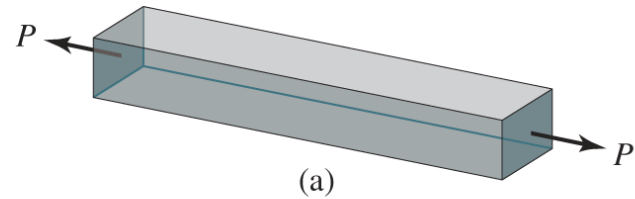
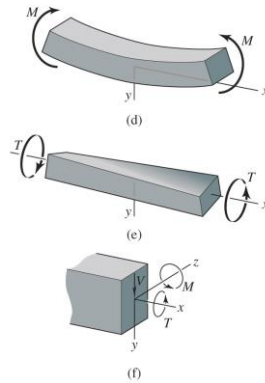


Cortante



Cálculo de tensiones

- (a) Tracción
- (b) Compresión
- (c) Cortadura
- (d) Flexión
- (e) Torsión
- (f) Cargas combinadas



Muchas gracias

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