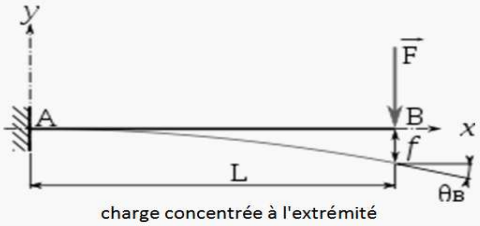
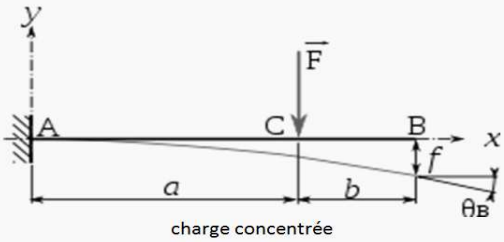
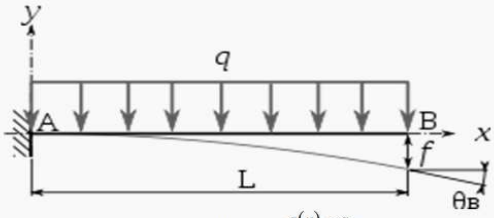
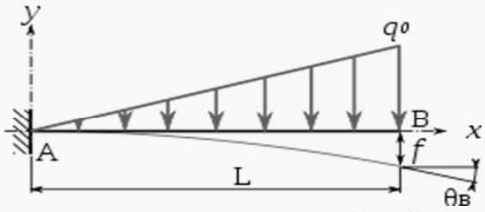
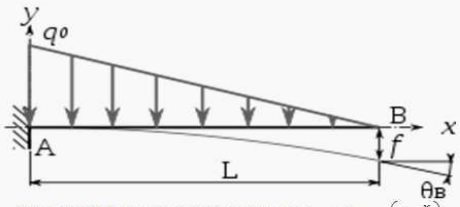
RESISTANCE DES MATERIAUX

Déformée d'une poutre isostatique encastrée

Sollicitation	Flèche	Pente
 charge concentrée à l'extrémité	$f = -\frac{FL^3}{3EI}$	$\theta_B = \frac{FL^2}{2EI}$
	$y = \frac{F}{6EI}(x^3 - 3Lx^2)$	
 charge concentrée	$f = \frac{Fa^2}{6EI}(a - 3L)$	$\theta_B = \theta_C = \frac{Fa^2}{2EI}$
	$x \leqslant a : y = \frac{F}{6EI}(x^3 - 3ax^2)$ $x \geqslant a : y = \frac{F}{6EI}(-3a^2x + a^3)$	
 charge uniforme $q(x) = q_0$	$f = -\frac{qL^4}{8EI}$	$\theta_B = \frac{qL^3}{6EI}$
	$y = \frac{-qx^2}{24EI}(x^2 - 4Lx + 6L^2)$	
 Charge linéairement croissante $q(x) = q_0 \cdot \frac{x}{L}$	$f = -\frac{11q_0L^4}{120EI}$	$\theta_B = \frac{q_0L^3}{8EI}$
	$y = \frac{-q_0x^2}{120EIL}(x^3 - 10L^2x + 20L^3)$	
 Charge linéairement décroissante $q(x) = q_0 \cdot \left(1 - \frac{x}{L}\right)$	$f = -\frac{q_0L^4}{30EI}$	$\theta_B = \frac{q_0L^3}{24EI}$
	$y = \frac{q_0x^2}{120EIL}(x^3 - 5Lx^2 + 10L^2x - 10L^3)$	

Source : http://fr.wikibooks.org/