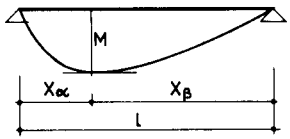
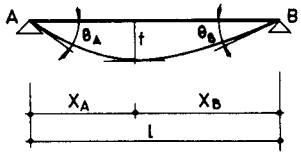
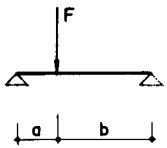
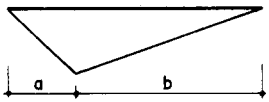
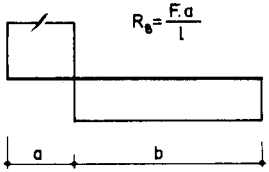
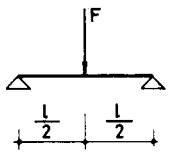
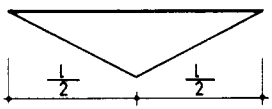
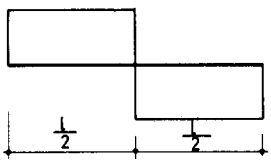
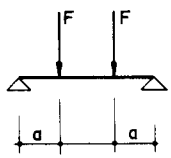
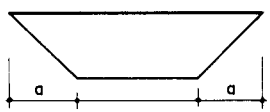
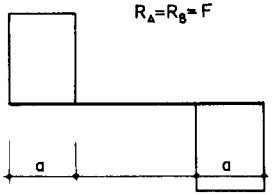
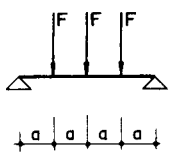
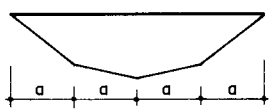
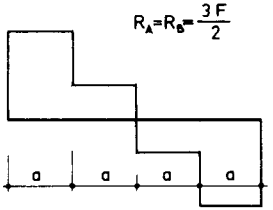
VIGA APOYADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos en valor absoluto.



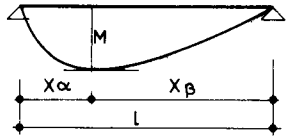


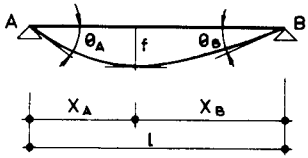
SOLICITACION	DIAGRAMA DE MOMENTOS FLECTORES MOMENTO MAXIMO	DIAGRAMA DE ESFUERZOS CORTANTES REACCIONES EN APOYOS	FLECHAS MAXIMAS ANGULOS DE GIRO EXTREMOS
	$M=\frac{F\,a\,b}{l}$ 	$R_A=\frac{F.b}{l}$ $R_B=\frac{F.a}{l}$ 	$a<b$ „ $x_B=\left[\frac{b(l+a)}{3}\right]^{\frac{1}{2}}$ „ $f=\frac{F.a}{3lEI}\left[\frac{b(l+a)}{3}\right]^{\frac{3}{2}}$ $a>b$ „ $x_A=\left[\frac{a(l+b)}{3}\right]^{\frac{1}{2}}$ „ $f=\frac{F.b}{3lEI}\left[\frac{a(l+b)}{3}\right]^{\frac{3}{2}}$ $\theta_A=\frac{Fab(l+b)}{6lEI}$ „ $\theta_B=\frac{Fab(l+a)}{6lEI}$
	$M=\frac{Fl}{4}$ 	$R_A=R_B=\frac{F}{2}$ 	$x_A=x_B=\frac{l}{2}$ „ $f=\frac{F\,l^3}{48\,EI}$ „ $\theta_A=\theta_B=\frac{Fl^2}{16EI}$
	$M=F.a$ 	$R_A=R_B=F$ 	$x_A=x_B=\frac{l}{2}$ „ $f=\frac{F.a}{24EI}(3l^2-4a^2)$ $\theta_A=\theta_B=\frac{F.a(l-a)}{2EI}$
	$M=\frac{Fl}{2}$ 	$R_A=R_B=\frac{3F}{2}$ 	$x_A=x_B=\frac{l}{2}$ „ $f=\frac{19}{384}\cdot\frac{F}{EI}l^3$ $\theta_A=\theta_B=\frac{5Fl^2}{32EI}$

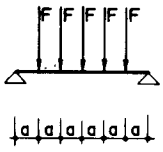
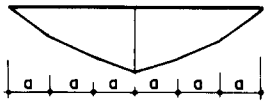
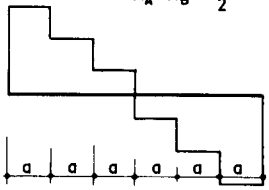
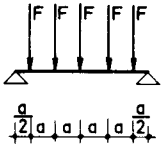
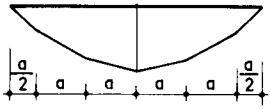
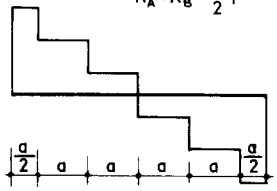
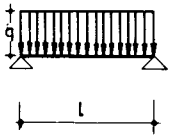
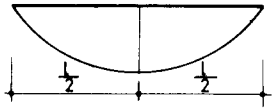
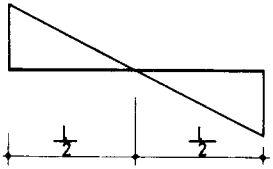
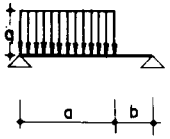
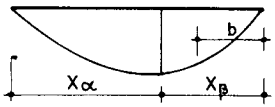
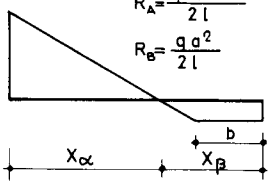
VIGA APOYADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos en valor absoluto



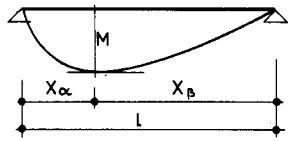


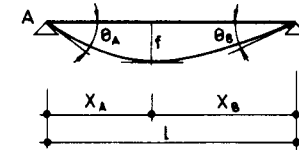
SOLICITACION	DIAGRAMA DE MOMENTOS FLECTORES MOMENTO MAXIMO	DIAGRAMA DE ESFUERZOS CORTANTES REACCIONES EN APOYOS	FLECHAS MAXIMAS ANGULOS DE GIRO EXTREMOS
	$n = 2k$, $M = \frac{n}{8} Fl$ $n = 2k+1$, $M = \frac{n^2-1}{8n} Fl$ 	$R_A = R_B = \frac{n-1}{2} F$ 	$x_A = x_B = \frac{l}{2}$ { $n=2k$, $f = \frac{5n^2-4}{384.n} \cdot \frac{Fl^3}{EI}$; $n=2k+1$, $f = \frac{(5n^2+1)(n^2-1)}{384 n^3} \cdot \frac{Fl^3}{EI}$ $\theta_A = \theta_B = \frac{n^2-1}{24n} \cdot \frac{Fl^2}{EI}$
	$n = 2k$, $M = \frac{n}{8} Fl$ $n = 2k+1$, $M = \frac{n^2+1}{8n} Fl$ 	$R_A = R_B = \frac{n}{2} F$ 	$x_A = x_B = \frac{l}{2}$ { $n=2k$, $f = \frac{-n^4+6n^3+2n^2+4n-4}{384 n^2} \cdot \frac{Fl^3}{EI}$; $n=2k+1$, $f = \frac{5n^4+2n^2+1}{384 n^3} \cdot \frac{Fl^3}{EI}$ $\theta_A = \theta_B = \frac{2n^2+1}{48n} \cdot \frac{Fl^2}{EI}$
	$M = \frac{1}{8} q l^2$ 	$R_A = R_B = \frac{q l}{2}$ 	$x_A = x_B = \frac{l}{2}$, $f = \frac{5}{384} \cdot \frac{q l^4}{EI}$ $\theta_A = \theta_B = \frac{q l^3}{24 EI}$
	$x_\alpha = \frac{a(l+b)}{2l}$, $M = \frac{q a^2 (l+b)^2}{8 l^2}$ 	$R_A = \frac{q a (l+b)}{2l}$ $R_B = \frac{q a^2}{2l}$ 	$a < 0'4531.l$, $x_B = \left[\frac{2l^2-a^2}{6}\right]^{\frac{1}{2}}$, $f = \frac{q a^2}{6}\left[\frac{2l^2-a^2}{6}\right]^{\frac{3}{2}}$ $a > 0'4531.l$, $x_B = \frac{58'575 \cdot l - 8'575 \cdot a}{100}$ $f = \frac{q l^4}{10^3 EI} (13'5734 \frac{a}{l} - 0'5526)$ $\theta_A = \frac{q a^2 l}{24 EI} (2 - \frac{a}{l})^2$, $\theta_B = \frac{q a^2 l}{24 EI} (2 - \frac{a^2}{l^2})$

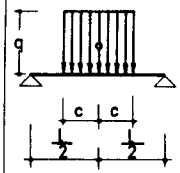
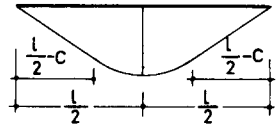
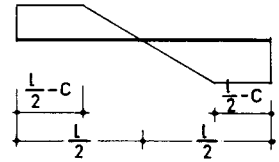
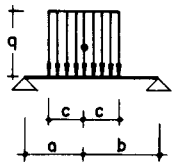
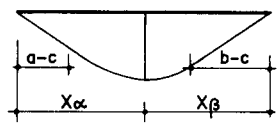
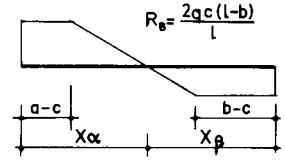
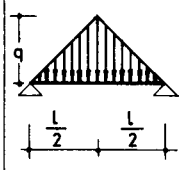
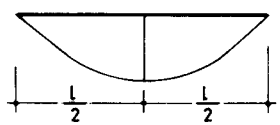
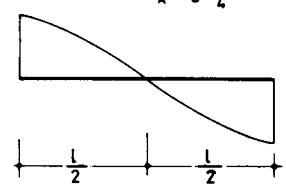
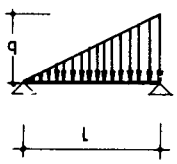
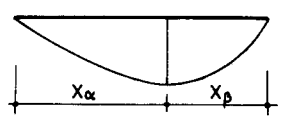
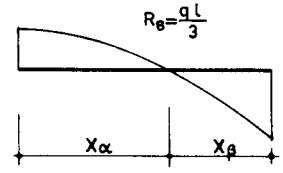
VIGA APOYADA

DISTINTAS HIPOTESIS DE CARGA

q y segmentos en valor absoluto



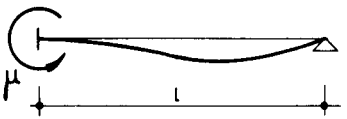


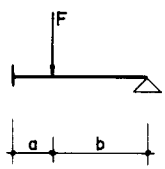
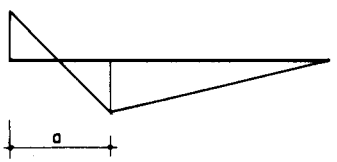
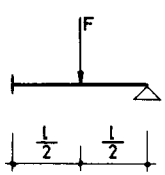
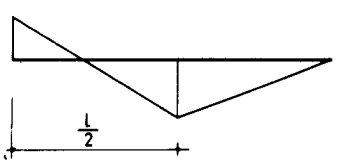
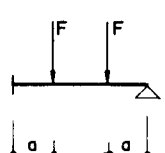
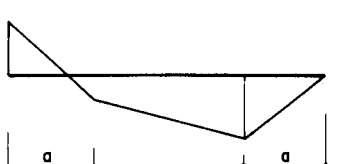
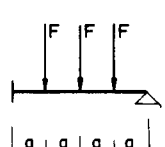
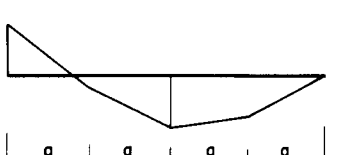
SOLICITACION	DIAGRAMA DE MOMENTOS FLECTORES MOMENTO MAXIMO	DIAGRAMA DE ESFUERZOS CORTANTES REACCIONES EN APOYOS	FLECHAS MAXIMAS ANGULOS DE GIRO EXTREMOS
	$M=\frac{qc(l-c)}{2}$ 	$R_A=R_B=qc$ 	$x_A=x_B=\frac{l}{2}$; $f=\frac{qcl^3}{24EI}\left[1-\frac{c^2}{l^2}\left(2-\frac{c}{l}\right)\right]$ $\theta_A=\theta_B=\frac{qcl^2}{24EI}\left(3-4\frac{c^2}{l^2}\right)$
	$X_\alpha=a+c-\frac{2ac}{l}$; $M=2qac\left(\frac{b-c}{l}+\frac{ac}{l^2}\right)$ 	$R_A=\frac{2qc(l-a)}{l}$ $R_B=\frac{2qc(l-b)}{l}$ 	$\theta_A=\frac{qbcl}{3EI}\left(1-\frac{b^2}{l^2}-\frac{c^2}{l^2}\right)$; $\theta_B=\frac{qacl}{3EI}\left(1-\frac{a^2}{l^2}-\frac{c^2}{l^2}\right)$
	$M=\frac{ql^2}{12}$ 	$R_A=R_B=\frac{ql}{4}$ 	$x_A=x_B=\frac{l}{2}$; $f=\frac{ql^4}{120\cdot EI}$ $\theta_A=\theta_B=\frac{5ql^3}{196\cdot EI}$
	$x_\alpha=\frac{l}{\sqrt{3}}$ $M=\frac{ql^2}{9\sqrt{3}}$ 	$R_A=\frac{ql}{6}$ $R_B=\frac{ql}{3}$ 	$x_A=0'5193\,l$; $f=\frac{6'522}{10^3}\cdot\frac{ql^4}{EI}$ $\theta_A=\frac{7ql^3}{360\cdot EI}$; $\theta_B=\frac{ql^3}{45\cdot EI}$

VIGA APOYADA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F,q y segmentos, en valor absoluto.

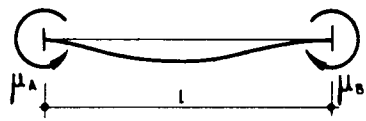


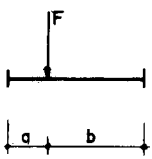
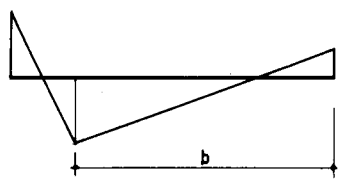
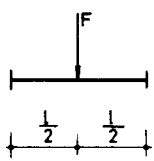
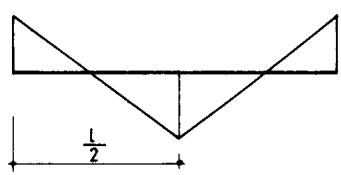
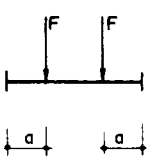
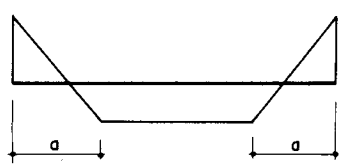
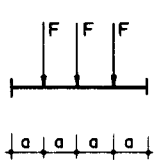
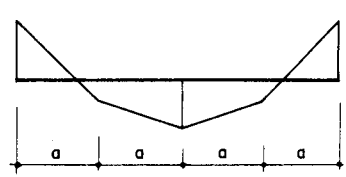
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu=\frac{Fab(l+b)}{2l^2}$	$R_A=\frac{Fb}{2l}\left(3-\frac{b^2}{l^2}\right)$ $R_B=\frac{Fa^2}{2l^2}\left(3-\frac{a}{l}\right)$	
	$\mu=\frac{3}{16}Fl$	$R_A=\frac{11}{16}F$ $R_B=\frac{5}{16}F$	
	$\mu=\frac{3Fa(l-a)}{2l}$	$R_A=\frac{F}{2}\left[2+3\frac{a}{l}\left(1-\frac{a}{l}\right)\right]$ $R_B=\frac{F}{2}\left[2-3\frac{a}{l}\left(1-\frac{a}{l}\right)\right]$	
	$\mu=\frac{15}{32}Fl$	$R_A=\frac{63}{32}F$ $R_B=\frac{33}{32}F$	

VIGA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F,q y segmentos, en valor absoluto.

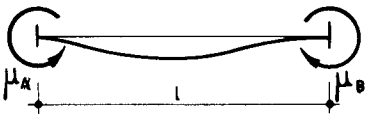


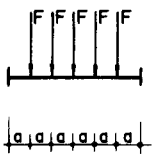
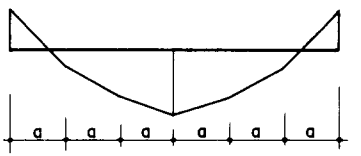
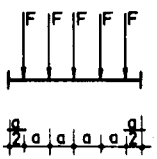
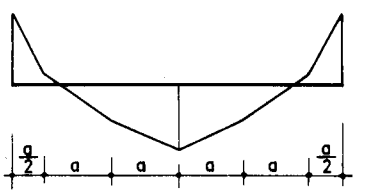
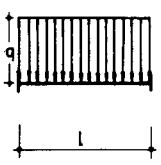
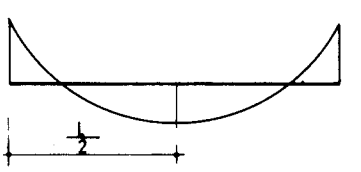
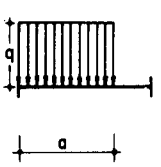
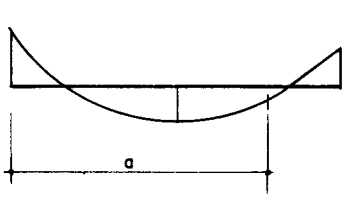
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu_A = \frac{Fab^2}{l^2}$ $\mu_B = -\frac{Fa^2b}{l^2}$	$R_A = F\frac{b^2}{l^2}(3-2\frac{b}{l})$ $R_B = F\frac{a^2}{l^2}(3-2\frac{a}{l})$	
	$\mu_A = \frac{Fl}{8}$ $\mu_B = -\frac{Fl}{8}$	$R_A = \frac{F}{2}$ $R_B = \frac{F}{2}$	
	$\mu_A = \frac{Fa(l-a)}{l}$ $\mu_B = -\frac{Fa(l-a)}{l}$	$R_A = F$ $R_B = F$	
	$\mu_A = \frac{5Fl}{16}$ $\mu_B = -\frac{5Fl}{16}$	$R_A = \frac{3}{2}F$ $R_B = \frac{3}{2}F$	

VIGA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos, en valor absoluto.

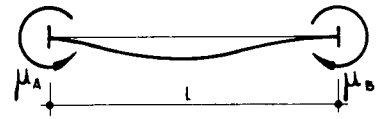


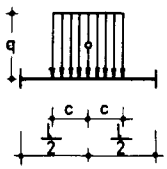
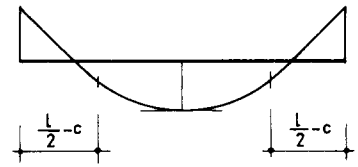
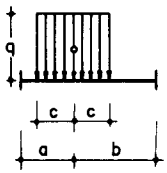
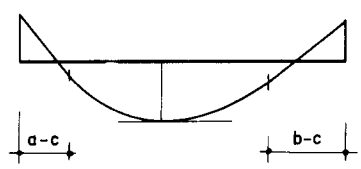
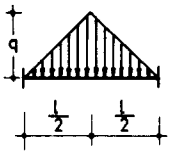
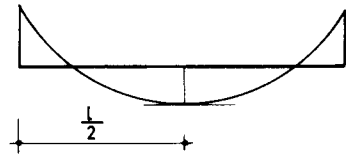
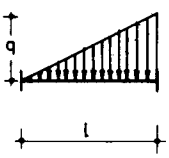
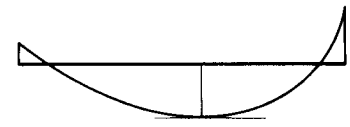
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
 nº de fuerzas=n−1	$\mu_A=\frac{Fl(n^2-1)}{12n}$ $\mu_B=-\frac{Fl(n^2-1)}{12n}$	$R_A=\frac{n-1}{2}F$ $R_B=\frac{n-1}{2}F$	
 nº de fuerzas = n	$\mu_A=\frac{Fl(2n^2+1)}{24n}$ $\mu_B=-\frac{Fl(2n^2+1)}{24n}$	$R_A=\frac{n}{2}F$ $R_B=\frac{n}{2}F$	
	$\mu_A=\frac{ql^2}{12}$ $\mu_B=-\frac{ql^2}{12}$	$R_A=\frac{ql}{2}$ $R_B=\frac{ql}{2}$	
	$\mu_A=\frac{qa^2}{12}\left[6-\frac{a}{l}\left(8-3\frac{a}{l}\right)\right]$ $\mu_B=-\frac{qa^3}{12l}\left(4-3\frac{a}{l}\right)$	$R_A=\frac{qa}{2}\left[2-\frac{a^2}{l^2}\left(2-\frac{a}{l}\right)\right]$ $R_B=\frac{qa^3}{2l^2}\left(2-\frac{a}{l}\right)$	

VIGA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos, en valor absoluto.

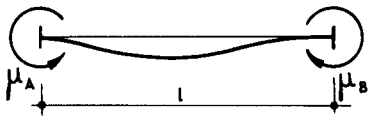


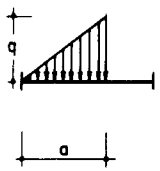
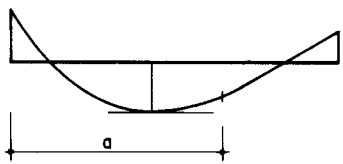
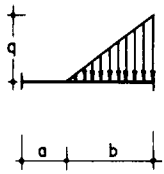
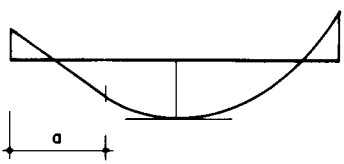
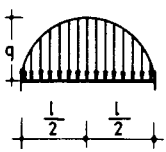
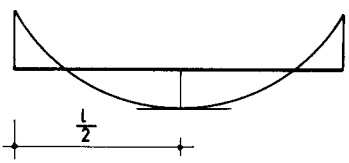
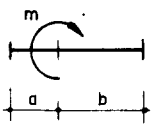
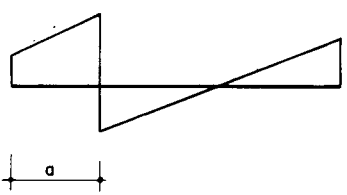
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu_A = \frac{qc}{12l}(3l^2-4c^2)$ $\mu_B = -\frac{qc}{12l}(3l^2-4c^2)$	$R_A = qc$ $R_B = qc$	
	$\mu_A = 2qc\left(a\frac{b^2}{l^2} - \frac{c^2}{l^2}\frac{3b-l}{3}\right)$ $\mu_B = -2qc\left(b\frac{a^2}{l^2} - \frac{c^2}{l^2}\frac{3a-l}{3}\right)$	$R_A = 2qc\left[1-3\frac{a^2}{l^2}-\frac{c^2}{l^2}+2\frac{a}{l}\left(\frac{a^2}{l^2}+\frac{c^2}{l^2}\right)\right]$ $R_B = 2qc\left[3\frac{a^2}{l^2}+\frac{c^2}{l^2}-2\frac{a}{l}\left(\frac{a^2}{l^2}+\frac{c^2}{l^2}\right)\right]$	
	$\mu_A = \frac{5}{96}ql^2$ $\mu_B = -\frac{5}{96}ql^2$	$R_A = \frac{ql}{4}$ $R_B = \frac{ql}{4}$	
	$\mu_A = \frac{ql^2}{30}$ $\mu_B = -\frac{ql^2}{20}$	$R_A = \frac{3}{20}ql$ $R_B = \frac{7}{20}ql$	

VIGA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos, en valor absoluto.

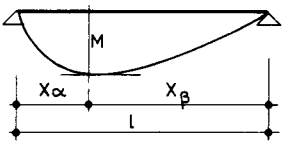


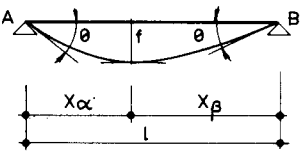
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu_A = \frac{q a^2}{30}\left[10 - \frac{a}{l}\left(15 - 6\frac{a}{l}\right)\right]$ $\mu_B = -\frac{q a^3}{20 l}\left(5 - 4\frac{a}{l}\right)$	$R_A = \frac{q a}{20}\left[10 - \frac{a^2}{l^2}\left(15 - 8\frac{a}{l}\right)\right]$ $R_B = \frac{q a^3}{20 l^2}\left(15 - 8\frac{a}{l}\right)$	
	$\mu_A = \frac{q b^3}{60 l}\left(5 - 3\frac{b}{l}\right)$ $\mu_B = -\frac{q b^2}{60}\left[3\frac{b^2}{l^2} + 10\frac{a}{l}\right]$	$R_A = \frac{q b^3}{20 l^2}\left(5 - \frac{2b}{l}\right)$ $R_B = \frac{q b}{20}\left[10 - \frac{b^2}{l^2}\left(5 - 2\frac{b}{l}\right)\right]$	
carga parabólica 	$\mu_A = -\frac{q l^2}{15}$ $\mu_B = -\frac{q l^2}{15}$	$R_A = \frac{q l}{3}$ $R_B = \frac{q l}{3}$	
	$\mu_A = m\frac{b}{l}\left(2 - 3\frac{b}{l}\right)$ $\mu_B = m\frac{a}{l}\left(2 - 3\frac{a}{l}\right)$	$R_A = m\frac{6ab}{l^3}$ $R_B = -m\frac{6ab}{l^3}$	

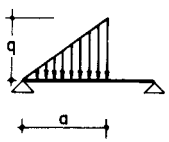
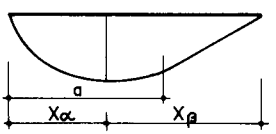
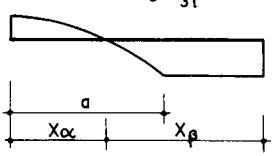
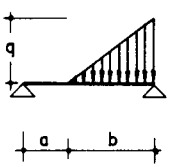
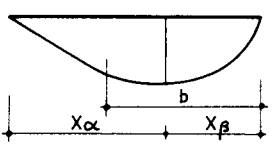
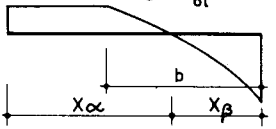
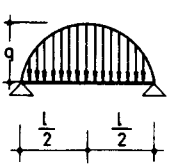
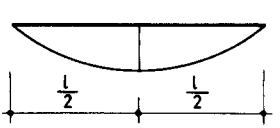
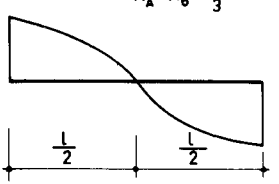
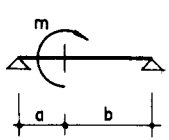
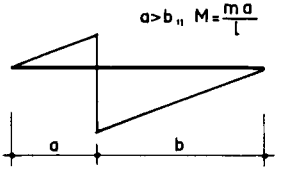
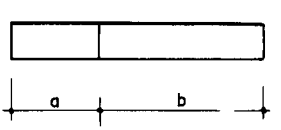
VIGA APOYADA

DISTINTAS HIPOTESIS DE CARGA

q y segmentos en valor absoluto

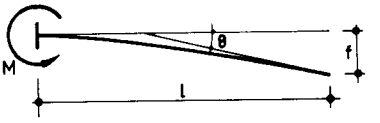




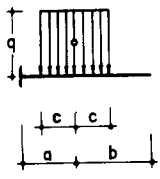
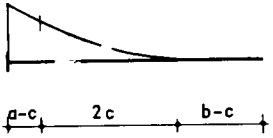
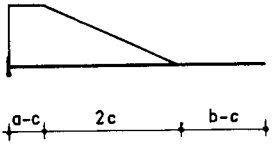
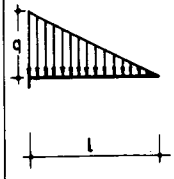
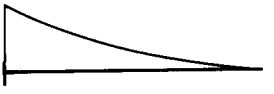
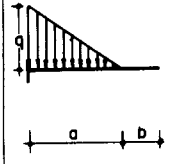
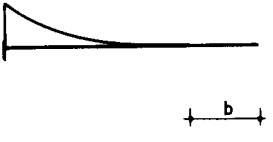
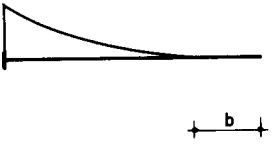
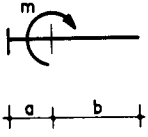
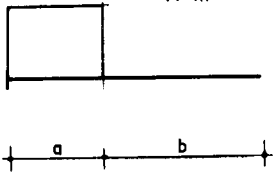
SOLICITACION	DIAGRAMA DE MOMENTOS FLECTORES MOMENTO MAXIMO	DIAGRAMA DE ESFUERZOS CORTANTES REACCIONES EN APOYOS	FLECHAS MAXIMAS ANGULOS DE GIRO EXTREMOS
	$x_\alpha = a\left[\frac{3L-2a}{3L}\right]^{1/2}$; $M = \frac{qa^2}{3}\left[\frac{3L-2a}{3L}\right]^{3/2}$ 	$R_A = \frac{qa(3L-2a)}{6l}$; $R_B = \frac{qa^2}{3l}$ 	$a<0'4607\cdot l$; $x_B = \left[\frac{5l^2-3a^2}{15}\right]^{\frac{1}{2}}$; $f = \frac{qa^2}{9EIl}\left[\frac{5l^2-3a^2}{15}\right]^{\frac{3}{2}}$ $a>0'4607\cdot l$; $x_A = (1'593\frac{a}{l} - 1'0737)\,l$; $f = \frac{ql^4}{10^3 EI}(4'117 + 2'405\frac{a}{l})$ $\theta_A = \frac{(12a^2 - 45al + 40l^2)qa^2}{360EIl}$; $\theta_B = \frac{(5l^2-3a^2)qa^2}{90EIl}$;
	$x_\beta = b(1-\sqrt{\frac{b}{3l}})$; $M = \frac{qb^2}{6}\left[\frac{a}{l} + 2\left(\frac{b}{3l}\right)^{3/2}\right]$ 	$R_A = \frac{qb^2}{6l}$; $R_B = \frac{qb(3l-b)}{6l}$ 	$b<0'4396\cdot l$; $x_A = \left[\frac{10l^2-3b^2}{30}\right]^{\frac{1}{2}}$; $f = \frac{qb^2}{18EIl}\left[\frac{10l^2-3b^2}{30}\right]^{\frac{3}{2}}$ $b>0'4396\cdot l$; $x_A = (1'2527 - 0'7334\frac{b}{l})\,l$; $f = \frac{ql^4}{10^3 EI}(8'267\frac{b}{l} - 1'745)$ $\theta_A = \frac{(10l^2-3b^2)qb^2}{360EIl}$; $\theta_B = \frac{(20l^2-15\cdot bl+3b^2)qb^2}{360\cdot EIl}$;
c. parabólica 	$M = \frac{5}{48}ql^2$ 	$R_A = R_B = \frac{ql}{3}$ 	$x_A = x_B = \frac{l}{2}$; $f = \frac{61\,ql^4}{5.760\cdot EI}$ $\theta_A = \theta_B = \frac{ql^3}{30\cdot EI}$
	$a<b$; $M = \frac{mb}{l}$ $a>b$; $M = \frac{ma}{l}$ 	$R_A = -R_B = \frac{m}{l}$ 	$a<b$; $x_A = l - \left[\frac{l^2-3a^2}{3}\right]^{\frac{1}{2}}$; $f = \frac{m}{3EIl}\left[\frac{l^2-3a^2}{3}\right]^{\frac{3}{2}}$ $b<a$; $x_B = l - \left[\frac{l^2-3b^2}{3}\right]^{\frac{1}{2}}$; $f = \frac{m}{3EIl}\left[\frac{l^2-3b^2}{3}\right]^{\frac{3}{2}}$ $\theta_A = \frac{m(l^2-3b^2)}{6EIl}$; $\theta_B = \frac{m(l^2-3a^2)}{6EIl}$;

VIGA EN VOLADIZO

DISTINTAS HIPOTESIS DE CARGA



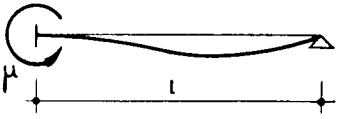
F,q y segmentos, en valor absoluto

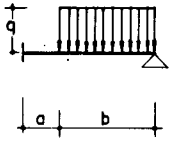
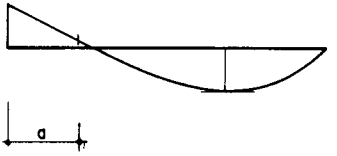
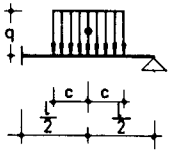
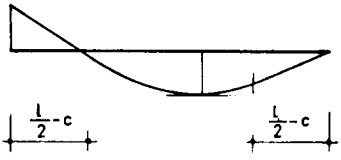
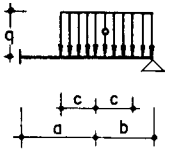
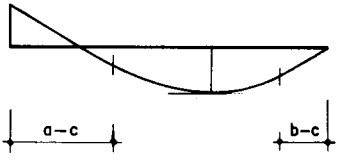
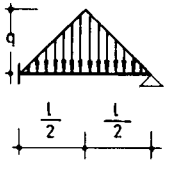
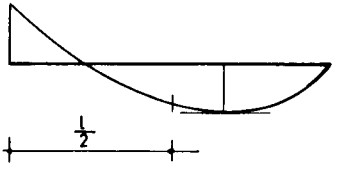
SOLICITACION	DIAGRAMA DE MOMENTOS FLECTORES MOMENTO MAXIMO	DIAGRAMA DE ESFUERZOS CORTANTES REACCION EN APOYO	FLECHA MAXIMA ANGULO DE GIRO EXTREMO
	$M=2qca$ 	$R=2qc$ 	$f=\frac{qca^2}{3EI}\left[l\left(3+\frac{c^2}{a^2}\right)-a\left(1+\frac{c^2}{a^2}\right)\right]$ $\theta=\frac{a}{6EI}\left[a^3-15c^3+3ac(a+c)\right]$
	$M=\frac{1}{6}ql^2$ 	$R=\frac{1}{2}ql$ 	$f=\frac{ql^4}{30EI}$ $\theta=\frac{ql^3}{24EI}$
	$M=\frac{1}{6}ql^2$ 	$R=\frac{1}{2}ql$ 	$f=\frac{qa^3}{120EI}(5l-a)$ $\theta=\frac{qa^3}{24EI}$
	$M=m$ 	$R=0$ 	$f=\frac{ma}{2EI}(2l-a)$ $\theta=\frac{ma}{EI}$

VIGA APOYADA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos, en valor absoluto

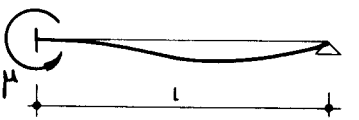


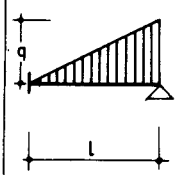
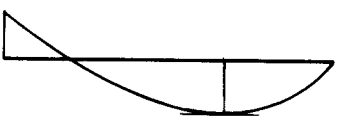
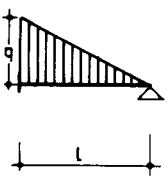
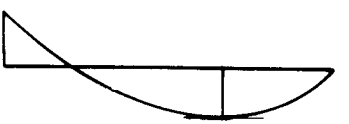
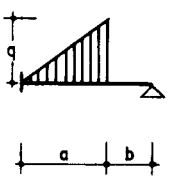
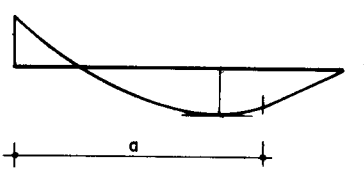
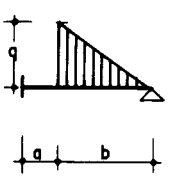
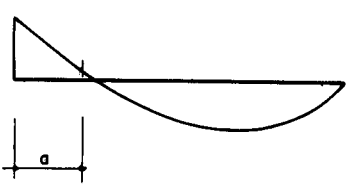
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu = \frac{q\,b^2}{8\,l^2}(2l^2 - b^2)$	$R_A = \frac{q\,b^2}{8\,l}(6 - \frac{b^2}{l^2})$ $R_B = \frac{q\,b}{8}\left[8 - \frac{b}{l}(6 - \frac{b^2}{l^2})\right]$	
	$\mu = \frac{q\,c}{8\,l}(3l^2 - 4c^2)$	$R_A = \frac{q\,c}{8}(11 - 4\,\frac{c^2}{l^2})$ $R_B = \frac{q\,c}{8}(5 + 4\,\frac{c^2}{l^2})$	
	$\mu = \frac{q\,b\,c}{l^2}\left[a(l+b) - c^2\right]$	$R_A = qc\left[2 - 3\frac{a^2}{l^2} - \frac{c^2}{l^2} + \frac{a}{l}(\frac{a^2}{l^2} + \frac{c^2}{l^2})\right]$ $R_B = qc\left[3\frac{a^2}{l^2} + \frac{c^2}{l^2} - \frac{a}{l}(\frac{a^2}{l^2} + \frac{c^2}{l^2})\right]$	
	$\mu = \frac{5}{64}\,q\,l^2$	$R_A = \frac{21}{64}\,q\,l$ $R_B = \frac{11}{64}\,q\,l$	

VIGA APOYADA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos, en valor absoluto

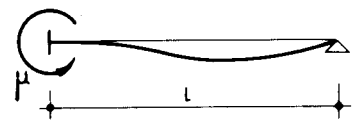


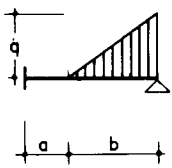
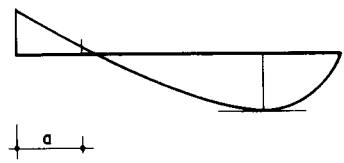
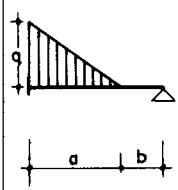
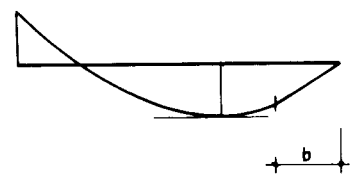
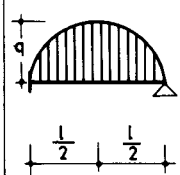
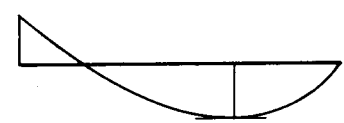
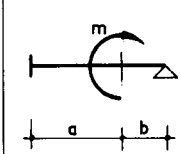
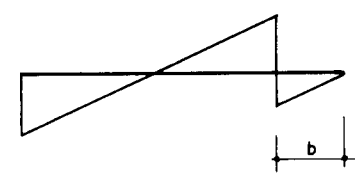
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu = \frac{7}{120} q\, l^2$	$R_A = \frac{9}{40} q\, l$ $R_B = \frac{11}{40} q\, l$	
	$\mu = \frac{q\, l^2}{15}$	$R_A = \frac{2}{5} q\, l$ $R_B = \frac{q\, l}{10}$	
	$\mu = \frac{q\, a^2}{120}\left[40 - 3\frac{a}{l}\left(15 - 4\frac{a}{l}\right)\right]$	$R_A = \frac{q\, a}{40}\left[20 - \frac{a^2}{l^2}\left(15 - 4\frac{a}{l}\right)\right]$ $R_B = \frac{q\, a^3}{40\, l^2}\left(15 - 4\frac{a}{l}\right)$	
	$\mu = \frac{q\, b^2}{30}\left(5 - 3\frac{b^2}{l^2}\right)$	$R_A = \frac{q\, b^2}{10\, l}\left(5 - \frac{b^2}{l^2}\right)$ $R_B = \frac{q\, b}{10}\left[5 - \frac{b}{l}\left(5 - \frac{b^2}{l^2}\right)\right]$	

VIGA APOYADA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos, en valor absoluto

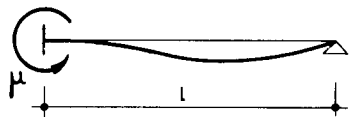


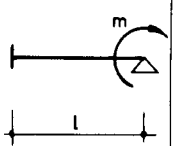
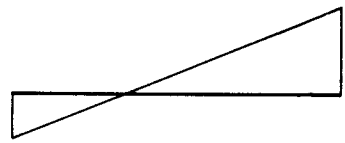
SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu=\frac{q\,b^2}{120}\left(10-3\frac{b^2}{l^2}\right)$	$R_A=\frac{q\,b^2}{40\,l}\left(10-\frac{b^2}{l^2}\right)$ $R_B=\frac{q\,b}{40}\left[20-\frac{b}{l}\left(10-\frac{b^2}{l^2}\right)\right]$	
	$\mu=\frac{q\,a^2}{120}\left[20-3\frac{a}{l}\left(5-\frac{a}{l}\right)\right]$	$R_A=\frac{q\,a}{40}\left[20-\frac{a^2}{l^2}\left(5-\frac{a}{l}\right)\right]$ $R_B=\frac{q\,a^3}{40\,l^2}\left(5-\frac{a}{l}\right)$	
c. parabólica 	$\mu=\frac{q\,l^2}{10}$	$R_A=\frac{13}{30}q\,l$ $R_B=\frac{7}{30}q\,l$	
	$\mu=\frac{m}{2}\left(1-3\frac{b^2}{l^2}\right)$	$R_A=\frac{3}{2}\frac{m\,a}{l^2}\left(2-\frac{a}{l}\right)$ $R_B=-\frac{3}{2}\frac{m\,a}{l^2}\left(2-\frac{a}{l}\right)$	

VIGA APOYADA EMPOTRADA

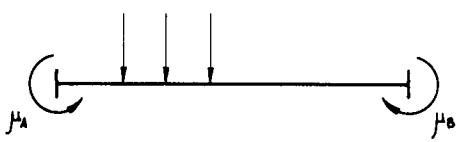
DISTINTAS HIPOTESIS DE CARGA

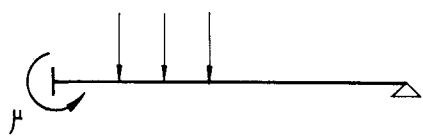
F, q y segmentos, en valor absoluto



SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
	$\mu = \frac{m}{2}$	$R_A = \frac{3}{2}\frac{m}{l}$ $R_B = -\frac{3}{2}\frac{m}{l}$	

CALCULO DEL MOMENTO DE EMPOTRAMIENTO DE UNA VIGA APOYADA-EMPOTRADA EN FUNCION DE LOS MOMENTOS DE EMPOTRAMIENTO PERFECTO.



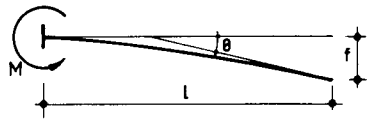


$$\mu = \mu_A - \beta_B \cdot \mu_B$$

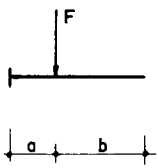
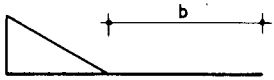
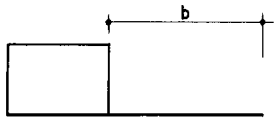
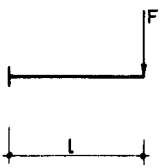
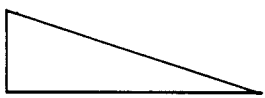
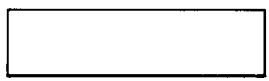
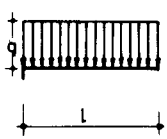
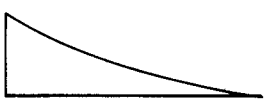
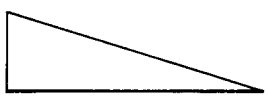
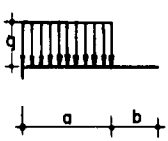
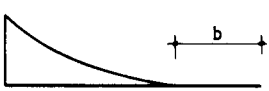
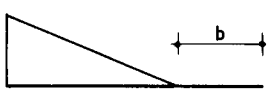
$$\mu = \mu_A - \frac{1}{2}\mu_B$$

VIGA EN VOLADIZO

DISTINTAS HIPOTESIS DE CARGA



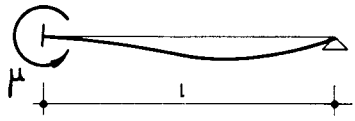
F,q y segmentos en valor absoluto

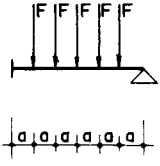
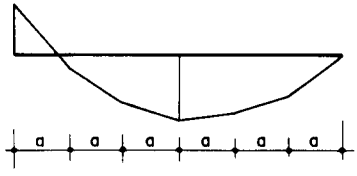
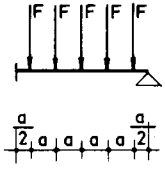
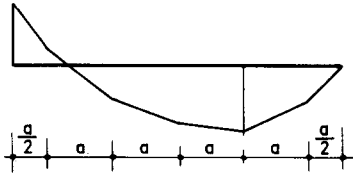
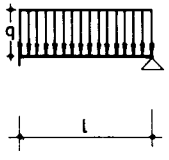
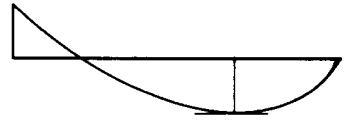
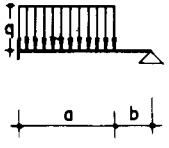
SOLICITACION	DIAGRAMA DE MOMENTOS FLECTORES MOMENTO MAXIMO	DIAGRAMA DE ESFUERZOS CORTANTES REACCION EN APOYO	FLECHA MAXIMA ANGULO DE GIRO EXTREMO
	 $M = F.a$	 $R = F$	$f = Fa^2 \frac{3l-a}{6EI}$ $\theta = \frac{Fa^2}{2EI}$
	 $M = Fl$	 $R = F$	$f = \frac{Fl^3}{3EI}$ $\theta = \frac{Fl^2}{2EI}$
	 $M = \frac{1}{2} q l^2$	 $R = q l$	$f = \frac{q l^4}{8EI}$ $\theta = \frac{q l^3}{6EI}$
	 $M = \frac{1}{2} q a^2$	 $R = qa$	$f = q a^3 \frac{4l-a}{24EI}$ $\theta = \frac{q a^3}{6EI}$

VIGA APOYADA EMPOTRADA

DISTINTAS HIPOTESIS DE CARGA

F, q y segmentos, en valor absoluto



SOLICITACION	MOMENTOS DE EMPOTRAMIENTO PERFECTO	REACCIONES EN LOS APOYOS	DIAGRAMA DE MOMENTOS FLECTORES
 nº de fuerzas = n − 1	$\mu = \frac{n^2-1}{8n} F l$	$R_A = \frac{(n-1)(5n+1)}{8n} F$ $R_B = \frac{(n-1)(3n-1)}{8n} F$	
 nº de fuerzas = n	$\mu = \frac{2n^2+1}{16n} F l$	$R_A = \frac{10n^2+1}{16n} F$ $R_B = \frac{6n^2-1}{16n} F$	
	$\mu = \frac{1}{8} q l^2$	$R_A = \frac{5}{8} q l$ $R_B = \frac{3}{8} q l$	
	$\mu = \frac{q a^2 (l+b)^2}{8 l^2}$	$R_A = \frac{q a}{8}\left(5 - \frac{b^2}{l^2}\right)\left(1 + \frac{b}{l}\right)$ $R_B = \frac{q a^3}{8 l^2}\left(4 - \frac{a}{l}\right)$