

IV - Formulaire

Poutre	Pente max	Fleche	Equation
	$\theta_B = \frac{FL}{2EI}$	$f_B = \frac{FL^3}{3EI}$	$y = -\frac{Fx^2}{2EI} (2L-x)$ $y = -\frac{FL^3}{6EI} (3L-x)$
	$\theta_B = \frac{qL^3}{6EI}$	$f_B = -\frac{qL^4}{8EI}$	$y = -\frac{qx}{6EI} (3L^2 - 3Lx + x^2)$ $y = -\frac{qx^2}{24EI} (x^2 - 4Lx + 6L^2)$
	$\theta_B = \frac{qL^3}{6EI} + \frac{FL^2}{2EI}$	$f_B = -\frac{qL^4}{24EI} (4L-a)$	$x \leq a: y = -\frac{qx}{6EI} (x^2 - 3ax + 3a^2)$ $y = -\frac{qx^2}{24EI} (x^2 - 4ax + 6a^2)$ $x > a: y = -\frac{qa^3}{6EI} - \frac{qax^2}{24EI} - \frac{F(x-a)^2}{2EI}$
	$\theta_B = \frac{FL^2}{2EI} + \frac{qL^3}{6EI}$	$f_B = -\frac{FL^3}{3EI} - \frac{qL^4}{8EI}$	$x \leq a: y = -\frac{Fx}{2EI} (2L-x)$ $y = -\frac{Fx^2}{6EI} (3a-x)$ $x > a: y = -\frac{F^2}{2EI} - \frac{F^2}{2EI}$ $y = -\frac{F^2}{6EI} (3x-a)$
	$\theta_B = \frac{FL^2}{2EI} + \frac{qL^3}{6EI}$	$f_B = -\frac{FL^3}{3EI} - \frac{qL^4}{8EI}$	$x \leq a: y = -\frac{Fx}{2EI} (2L-x)$ $y = -\frac{Fx^2}{6EI} (3a-x)$ $x > a: y = -\frac{F^2}{2EI} - \frac{F^2}{2EI}$ $y = -\frac{F^2}{6EI} (3x-a)$
	$\theta_B = \frac{FL^2}{2EI} + \frac{qL^3}{6EI}$	$f_B = -\frac{FL^3}{3EI} - \frac{qL^4}{8EI}$	$x \leq a: y = -\frac{Fx}{2EI} (2L-x)$ $y = -\frac{Fx^2}{6EI} (3a-x)$ $x > a: y = -\frac{F^2}{2EI} - \frac{F^2}{2EI}$ $y = -\frac{F^2}{6EI} (3x-a)$

Poutre	Pente max	Fleche max	Equations
	$\theta_A = -\frac{FL^3}{16EI}$ $\theta_B = \theta_A$	$f_C = -\frac{FL^3}{48EI}$	$0 \leq x < L/2$ $y = -\frac{F}{16EI} (L^2 - 4x^2)$ $y = -\frac{Fx}{48EI} (3L - 4x^2)$
	$\theta_A = -\frac{qL^3}{24EI}$ $\theta_B = \theta_A$	$f_C = -\frac{5qL^4}{384EI}$ pour $x = \frac{L}{2}$	$y = -\frac{qx}{24EI} (4L^2 - 6Lx + 3x^2)$ $y = -\frac{qx^2}{24EI} (x^2 - 2Lx + L^2)$
	$\theta_A = -\frac{qL^3}{24EI} - \frac{FL^2}{16EI}$ $\theta_B = -\frac{qL^3}{24EI} + \frac{FL^2}{16EI}$	$f_C = -\frac{5qL^4}{384EI} - \frac{FL^3}{48EI}$ pour $x = 0.5183L$	$x \leq x_1: y = -\frac{qx}{24EI} (4L^2 - 6Lx + 3x^2) - \frac{F(x-x_1)^2}{2EI}$ $y = -\frac{qx^2}{24EI} (x^2 - 4Lx + 6L^2) - \frac{F(x-x_1)^2}{2EI}$ $x > x_2: y = -\frac{q(x-x_2)^3}{6EI} - \frac{F(x-x_2)^2}{2EI}$
	$\theta_A = -\frac{qL^3}{24EI} - \frac{FL^2}{16EI}$ $\theta_B = -\frac{qL^3}{24EI} + \frac{FL^2}{16EI}$	$f_C = -\frac{5qL^4}{384EI} - \frac{FL^3}{48EI}$ pour $x = 0.5183L$	$x \leq x_1: y = -\frac{qx}{24EI} (4L^2 - 6Lx + 3x^2) - \frac{F(x-x_1)^2}{2EI}$ $y = -\frac{qx^2}{24EI} (x^2 - 4Lx + 6L^2) - \frac{F(x-x_1)^2}{2EI}$ $x > x_2: y = -\frac{q(x-x_2)^3}{6EI} - \frac{F(x-x_2)^2}{2EI}$