Singularity Functions for deflections
Statically indeterm. structures \[ \frac{d^2y}{dx^2} = \frac{M}{EI} \]

\[ 8 \frac{2k}{ft} C D E = \frac{F_{k}}{3k/ft} - \frac{G^{'}}{EI} \]

\[ EI \frac{d^2y}{dx^2} = +60 \langle x-0 \rangle - \frac{w \langle x-6 \rangle^2}{2} \]

\[ + w \langle x-16 \rangle - M \langle x-20 \rangle \]

\[ - \frac{b \langle x-24 \rangle^3}{2 \cdot 3} + \frac{b \langle x-33 \rangle^2}{2} + \frac{b \langle x-33 \rangle^3}{2 \cdot 3} \]

\[ \frac{3}{9} \]

\[ EI \frac{dy}{dx} = +60 \frac{\langle x-0 \rangle^2}{2} - \frac{w \langle x-6 \rangle^3}{2 \cdot 3} + \frac{w \langle x-16 \rangle^3}{2 \cdot 3} \]

\[ - M \langle x-20 \rangle - \frac{b}{b} \frac{\langle x-24 \rangle^4}{2 \cdot 3 \cdot 4} + + + + + C_1 \]

\[ EI y = +60 \frac{\langle x-0 \rangle^3}{2 \cdot 3} w \frac{\langle x-6 \rangle^4}{2 \cdot 3 \cdot 4} + + + + + C_1 x + C_2 \]

\[ @ x = 0, \; y = \text{haveno clue} \]

\[ @ x = 1, \; \theta = 0 \]
\begin{align*}
\Sigma F_h &= 0 = +R_3 \\
R_3 &= 0 \\
\Sigma F_v &= 0 \quad R_1, R_2, R_4 \\
\Gamma &= \frac{M c}{I} = \frac{M}{5}
\end{align*}

\[
E I \frac{d^2 y}{d x^2} = R_1 \left< x - a \right> - \frac{\omega \left< x - 10 \right>^2}{2} + R_2 \left< x - 22 \right>
\]

\[
+ R_4 \left< x - 22 \right>^2
\]

\[
E I \frac{dy}{dx} = \frac{R_1 \left< x - a \right>^2}{2} - \frac{\omega \left< x - 10 \right>^3}{2 \cdot 3} + C_1
\]

\[
E I y = \frac{R_1 \left< x - a \right>^3}{2 \cdot 3} - \frac{\omega \left< x - 10 \right>^4}{2 \cdot 3 \cdot 4} + C_1 x + C_2
\]

@ \( x = 0 \); \( y = 0 \):

\[
0 = \frac{R_1 \left< 0 \right>^3}{2 \cdot 3} - \frac{\omega \left< x \right>^4}{2 \cdot 3 \cdot 4} + C_1 0 + C_2
\]

@ \( x = L \); \( y = 0 \):

\[
0 = \frac{R_1 \left< 22 - a \right>^3}{2 \cdot 3} - \frac{\omega \left< 22 - 10 \right>^4}{2 \cdot 3 \cdot 4} + C_1 (22) + C_2
\]

@ \( x = L \); \( \frac{dy}{dx} = 0 \):

\[
0 = \frac{R_1 (22)^2}{2} - \frac{\omega (22 - 10)^3}{2 \cdot 3} + C_1
\]

\[
\Sigma M_{wall} = 0 \quad R_1, R_2, R_4
\]
\[ \Gamma = \frac{P}{A} \]

\[ P_{\alpha} = \frac{\pi^2 EI}{L^2} \left( \frac{K}{10^2} \right) \left( \frac{10^4}{1N^2} \right) \]
Column Buckling

\[ P L = \frac{n \pi^2}{L^2} \]

\[ P = \frac{1}{E} \frac{n \pi^2}{L^2} \]

\[ P_c = \frac{\pi^2 E L^2}{t^2 A} \]

\[ r_c = \frac{t}{\sqrt{A t}} \]

Euler's Buckling Equation

\[ P_c = \frac{\pi^2 E I}{L^2} \]

\[ \frac{P_c}{A} = \frac{\pi^2 E t}{L^2} \]

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