

Biegelinientafel

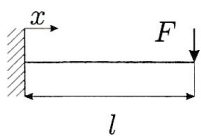
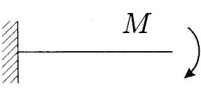
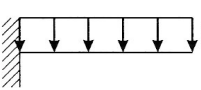
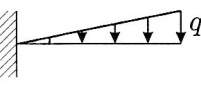
| | Gleichung der Biegelinie (x vom linken Auflager aus) | Durchbiegung | Verdrehungen $\varphi(x) = -w'(x)$ |
|--|---|--|---------------------------------------|
|  | $w = \frac{F}{6EI} (3lx^2 - x^3)$ | $w(l) = w_{\max} = \frac{Fl^3}{3EI}$ | $\varphi(l) = -\frac{Fl^2}{2EI}$ |
|  | $w = \frac{M}{2EI} x^2$ | $w(l) = w_{\max} = \frac{Ml^2}{2EI}$ | $\varphi(l) = -\frac{Ml}{EI}$ |
|  | $w = \frac{q}{24EI} (6l^2x^2 - 4lx^3 + x^4)$ | $w(l) = w_{\max} = \frac{ql^4}{8EI}$ | $\varphi(l) = -\frac{ql^3}{6EI}$ |
|  | $w = \frac{q_0}{120EI} (20l^3x^2 - 10l^2x^3 + x^5)$ | $w(l) = w_{\max} = \frac{11q_0l^4}{120EI}$ | $\varphi(l) = -\frac{q_0l^3}{8EI}$ |

Tabelle 2: Biegelinien und Verformungen von Balken ($EI = \text{konst.}$)

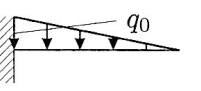
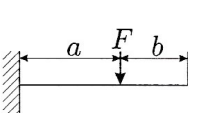
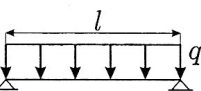
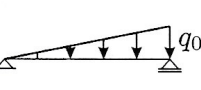
| | Gleichung der Biegelinie (x vom linken Auflager aus) | Durchbiegung | Verdrehungen $\varphi(x) = -w'(x)$ |
|--|---|--|--|
|  | $w = \frac{q_0}{120EI} (10l^3x^2 - 10l^2x^3 + 5lx^4 - x^5)$ | $w(l) = w_{\max} = \frac{q_0l^4}{30EI}$ | $\varphi(l) = -\frac{q_0l^3}{24EI}$ |
|  | $w = \frac{F}{6EI} (3ax^2 - x^3), \quad 0 \leq x \leq a$ $w = \frac{F}{6EI} (3a^2x - a^3), \quad a \leq x \leq l$ | $w(a) = \frac{Fa^3}{3EI}$ $w(l) = \frac{F}{6EI} (3la^2 - a^3)$ | $\varphi(a) = -\frac{Fa^2}{2EI}$ $\varphi(l) = -\frac{Fa^2}{2EI}$ |
|  | $w = \frac{q}{24EI} (l^3x - 2lx^3 + x^4)$ | $w\left(\frac{l}{2}\right) = w_{\max} = \frac{5ql^4}{384EI}$ | $\varphi(l) = -\varphi(0) = \frac{ql^3}{24EI}$ |
|  | $w = \frac{q_0}{360EI} (7l^4x - 10l^2x^3 + 3x^5)$ | $w\left(\frac{l}{2}\right) = 0.00651 \frac{q_0l^4}{EI}$ $w_{\max} = 0.00652 \frac{q_0l^4}{EI}$ <p style="text-align: center;">bei $x_m = 0.5193l$</p> | $\varphi(0) = -\frac{7q_0l^3}{360EI}$ $\varphi(l) = \frac{q_0l^3}{45EI}$ |

Tabelle 2: Fortsetzung – Biegelinien und Verformungen von Balken ($EI = \text{konst.}$)