

Baustatik I + II

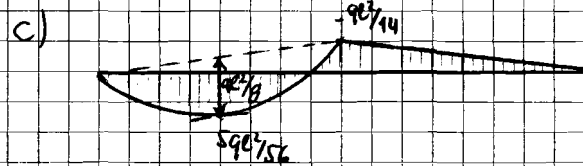
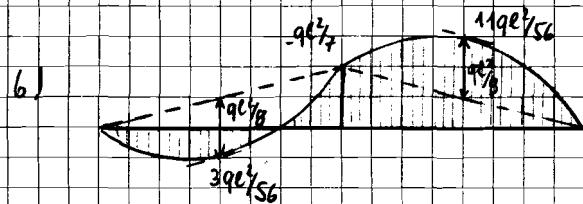
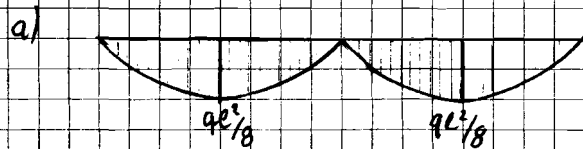
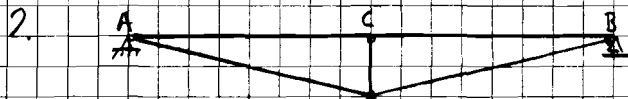
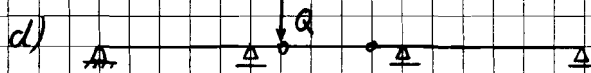
Lösung der Sektionsprüfung

Frühjahr 07

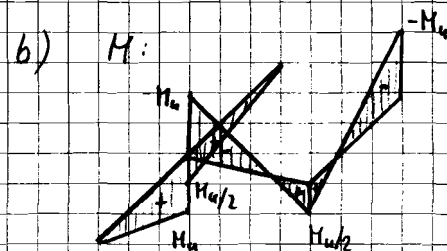
1 a) $b = 0.207 l$

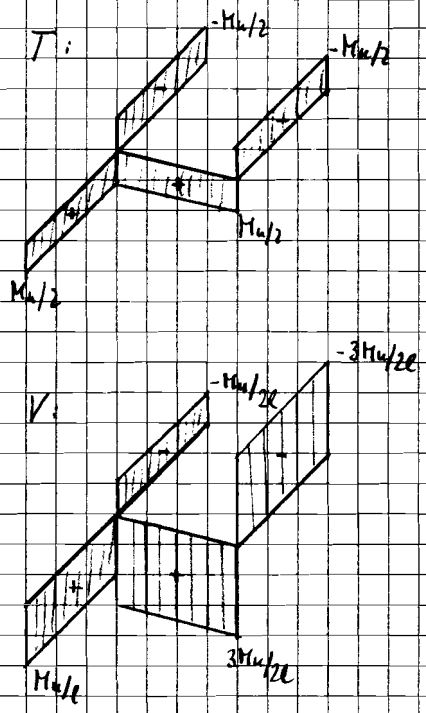
b) $a = 1.207 l$

c) $\varphi = 0.052 \frac{q l^3}{EI}$



3 a) $Q_n = \frac{4M_n}{e}$



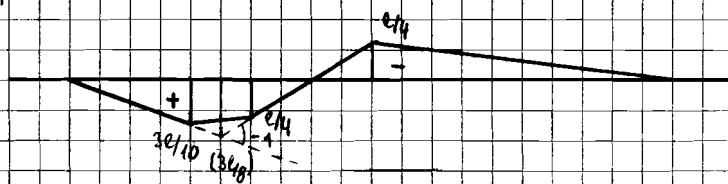


N: Normalkraft im Pendelstab $N = M_0/2$

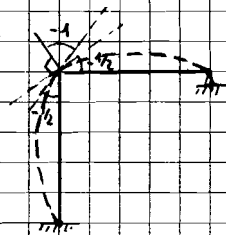
4.1.a) γ_{ch} :



b) γ_{HB} :



4.2.a) γ_{HB} :

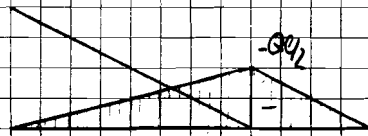


$$\gamma_{HB}(x) = -\frac{1}{4e^2} x^3 + \frac{3}{4e} x^2 - \frac{1}{2} x$$

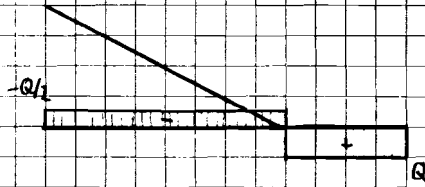
b) $x = 0.423e$

$$\gamma_{HB}(x = 0.423e) = -0.096e$$

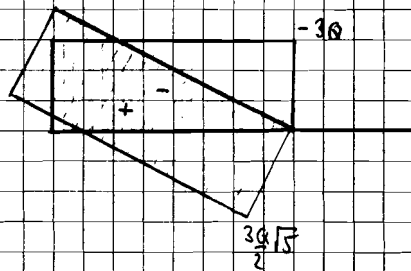
5a) M:



V:

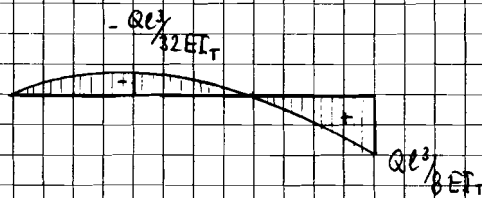


N:

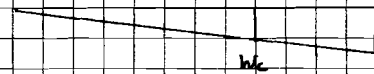


b) $w_c = 5.45 \text{ mm}$

c) M^* (unter Annahme $w_c = 0 \rightarrow$ starres Auflager in C \rightarrow Analogieträger mit Gelenk in C)



Überlagerung mit Einfluss von w_c :



$\rightarrow w_A = 0$

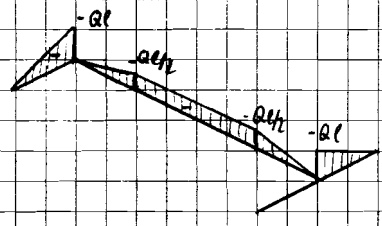
$$w_B = -\frac{Ql^3}{32EI_T} + \frac{w_c}{2} = -56.4 \text{ mm}$$

$$w_c = 5.45 \text{ mm}$$

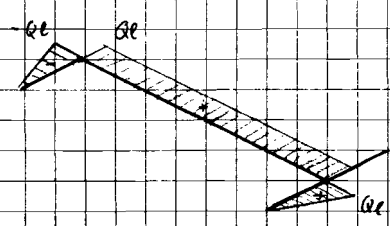
$$w_D = \frac{Ql^3}{8EI_T} + \frac{3w_c}{2} = 244.4 \text{ mm}$$

d) w_B (2. Ordnung) = -59.9 mm ($N_{Ccr} = -5223 \text{ kN}$)

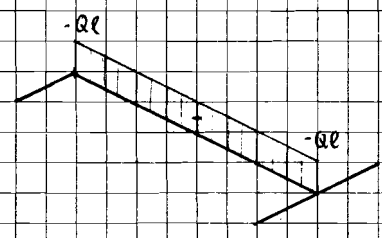
6.a) M_y :



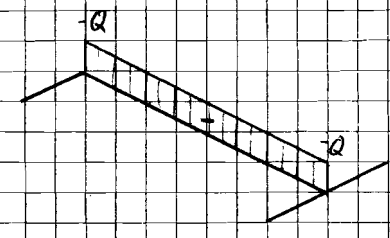
M_z :



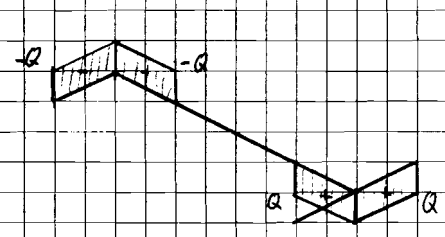
T :



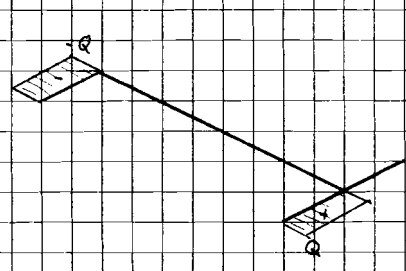
N_x :



V_x :



V_y :



b) $\sigma(T) = Q \cdot 3,527 \cdot 10^{-3} \text{ N/mm}^2$

$\sigma = -Q \cdot 8,446 \cdot 10^{-3} \text{ N/mm}^2$

$\sigma_1 = Q \cdot 1,279 \cdot 10^{-3} \text{ N/mm}^2$

$\sigma_2 = -Q \cdot 9,725 \cdot 10^{-3} \text{ N/mm}^2$

$Q_y = 22,5 \text{ kN}$