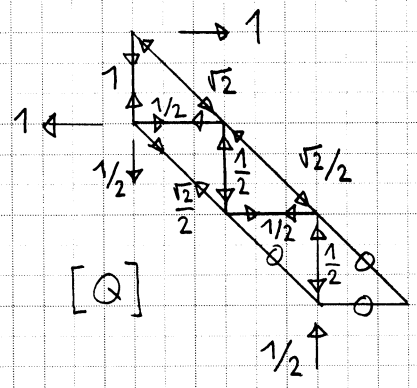
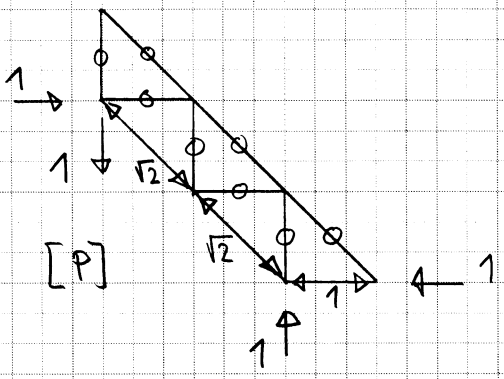
1) a) Stabkräfte



b) Stabkräfte



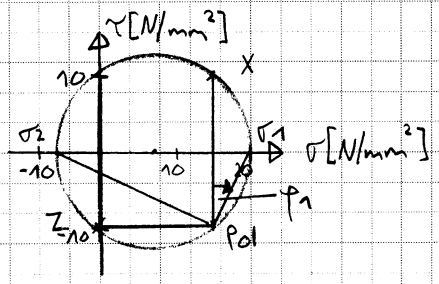
c) $Q = P \cdot \frac{1+4\sqrt{2}}{\sqrt{2}}$

d) $w_{z,7} = \frac{PL}{EA} \cdot (5 - \sqrt{2})$

2) a) –

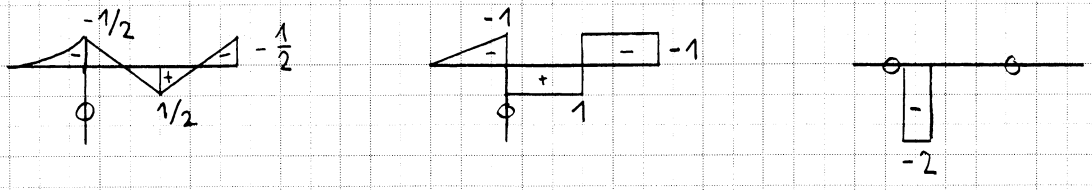
b) $\sigma_x = 15{,}65\ N/mm^2$, $\sigma_z = 0$, $\tau_{xz} = 9{,}45\ N/mm^2$

$\sigma_1 = 20{,}08\ N/mm^2$, $\sigma_2 = -4{,}46\ N/mm^2$, $\varphi_1 = 25{,}2°$



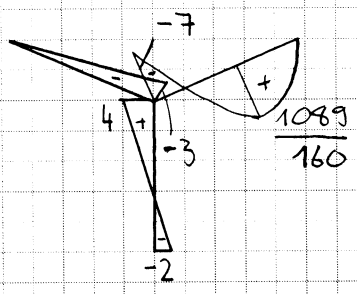
c) $Q_{x,erf} = 1579\,kN$ (Druck)

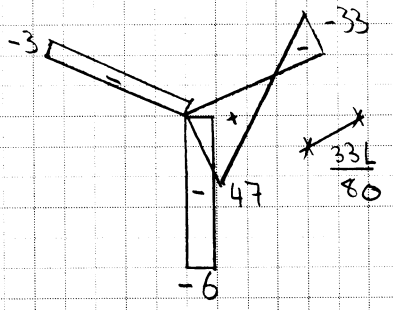
3) a) $M[qL^2]$ $V[qL]$ $N[qL]$

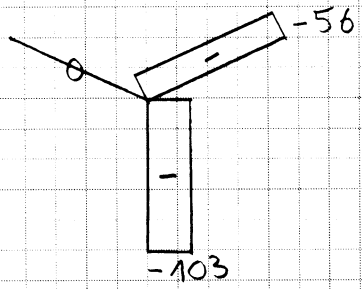


b) $\varphi_5 = 0$

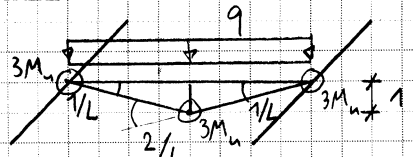
4) $\underline{M}\,[qL^2/80]$ $\underline{V}\,[qL/80]$ $\underline{N}\,[\sqrt{3}qL/240]$





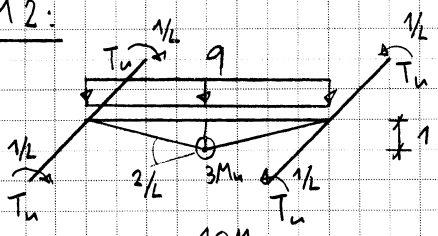


5) a) M1:



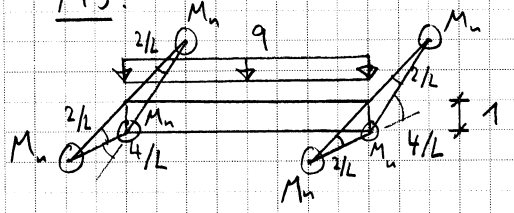
$$q_{1u} \leq \frac{12 M_u}{L^2}$$

M2:



$$q_{2u} \leq \frac{10 M_u}{L^2}$$

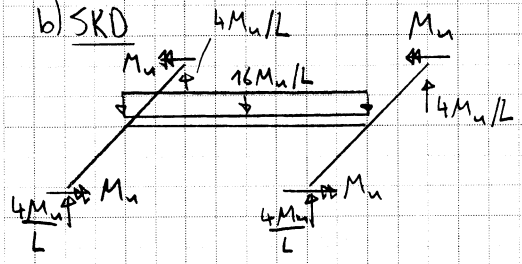
M3:



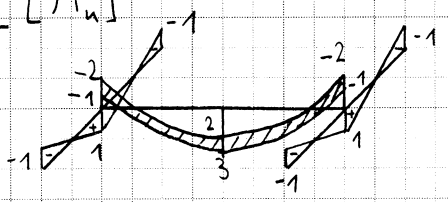
$$q_{3u} \leq \frac{8 M_u}{L^2}$$

M3 massgebend → $q_u \leq \frac{8 M_u}{L^2}$

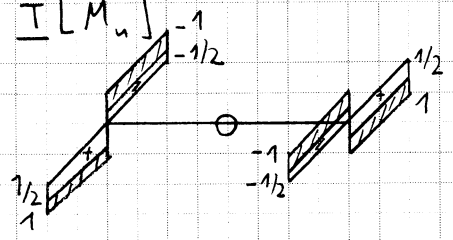
b) SKD



$M_y\,[M_u]$



$T\,[M_u]$



▨ möglicher Bereich für Schnittkräfte

→ Plastizitätskontrolle ok.

6) $Q_{cr} = \frac{96EI}{11L^2} \approx 0{,}884 \cdot \frac{\pi^2 EI}{L^2}$