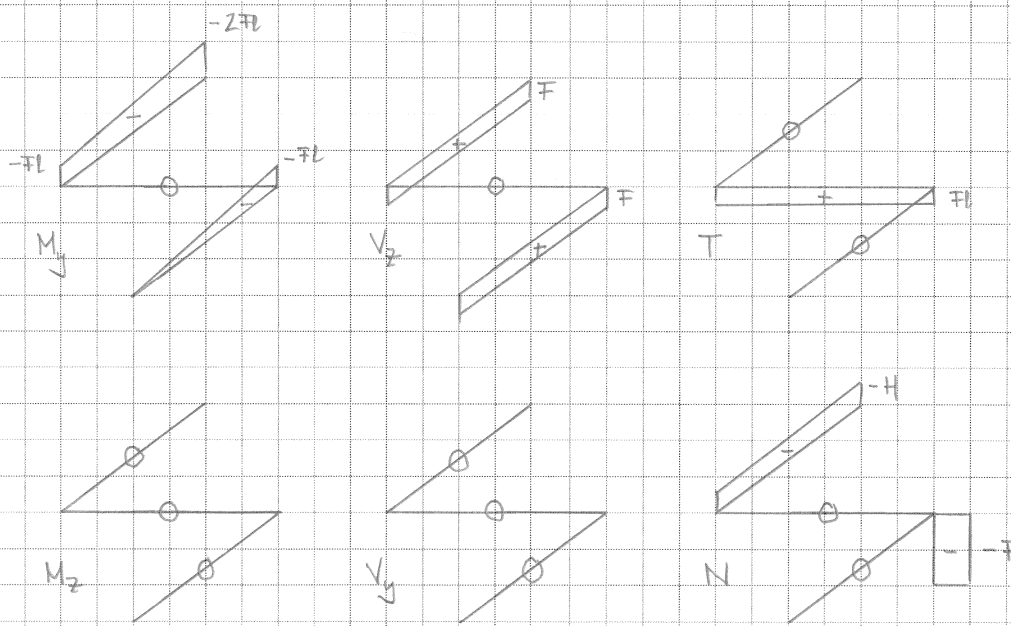


b) $s_{10-12} = \frac{25}{3} H$

c) $W_{10} = \frac{2525}{36} \cdot \frac{FL}{EA}$

2. a)



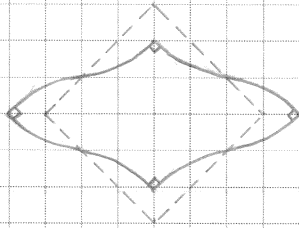
b) $t_f = 12 \text{ mm}$

c) $A = 5532 \text{ mm}^2$, $I_y = 86.96 \cdot 10^6 \text{ mm}^4$, $S_y(z_1) = 322.7 \cdot 10^3 \text{ mm}^3$

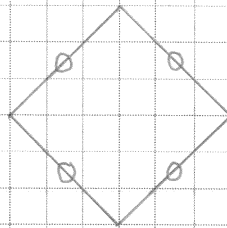
d) $\sigma_x = 40.9 \text{ N/mm}^2$, $\tau_{xz} = 5.3 \text{ N/mm}^2$

$\sigma_1 = 41.5 \text{ N/mm}^2$, $\sigma_2 = -0.7 \text{ N/mm}^2$, $\varphi_1 = 7.3^\circ$

3. a)

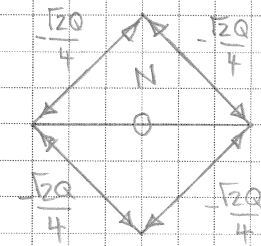
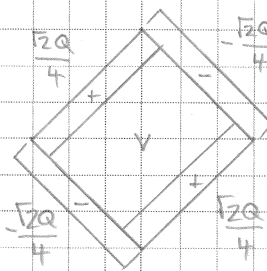
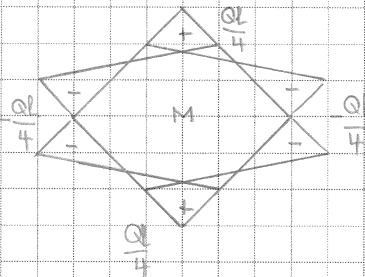


$EA_s \rightarrow 0$

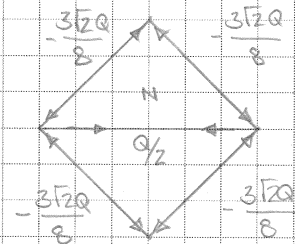
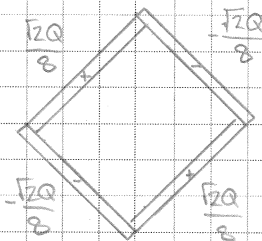
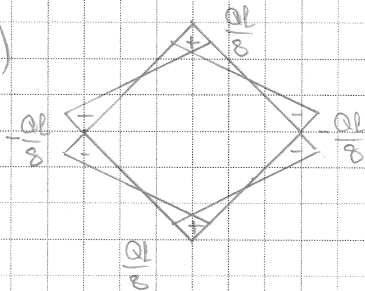


$EA_s \rightarrow \infty$

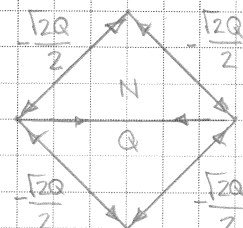
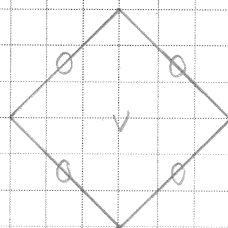
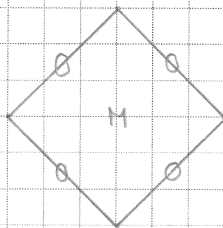
b)



c)



d)



e)

$EA_s \rightarrow 0$:

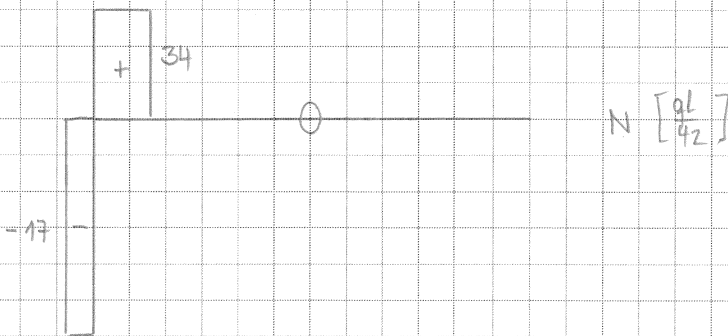
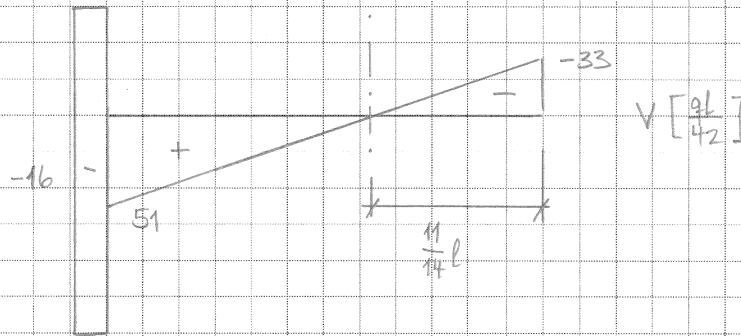
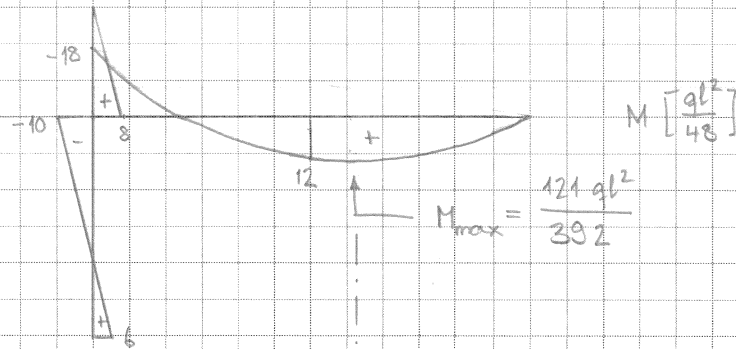
- WP der Biegelinie bei $M=0$
- Zugspannungen auf Seite der M-Fläche

$EA_s \rightarrow \infty$:

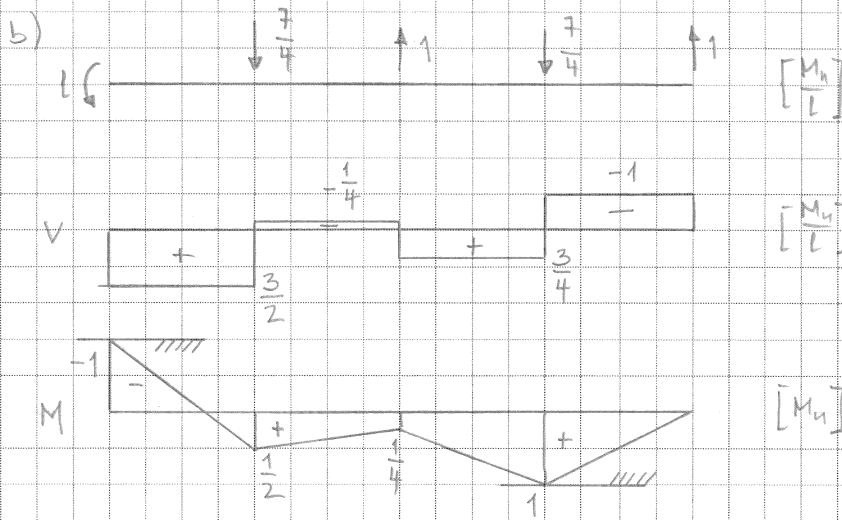
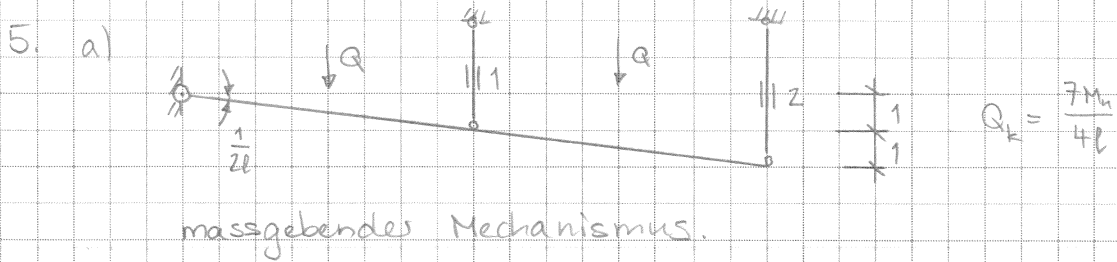
- Nur Normalkräfte, da $EA \rightarrow \infty$ keine Verformung.

4. a) $\varphi_2 = \frac{2}{7} \rho$ (+)

b)



c) $w = \frac{17 ql^4}{168 EI} \approx 0.1012 \frac{ql^4}{EI}$



Plastizitätskontrolle i.O.

c) $Q_u = \frac{7M_u}{4l}$

6. a) $F_{cr} = \frac{4EI}{3l^2}$

b) $M_{tot} = 147.1 \text{ kNm}$

c) $F_{cr} = \frac{48EI}{5l^2} = 9.6 \frac{EI}{l^2}$

d) $F_E = \frac{48EI}{l^2} = 9.87 \frac{EI}{l^2}$

- kleiner Unterschied $\sim 3\%$
- Euler: Sinusförmige Knickfigur
- Manella: Parabolische Knickfigur