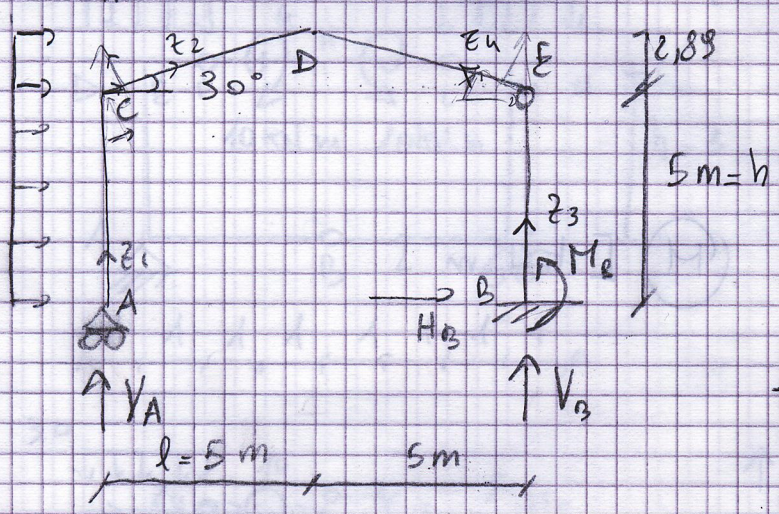
15 kN/m

FILA (A)



$\uparrow) V_A + V_B = 0 \quad V_A = -V_B$

$\circlearrowleft_{EDCA} -V_A \cdot 10 + 15 \cdot 7,89 \cdot 1,055 = 0$

$\rightarrow V_A = 12,46$

$V_B = -12,46$

$\rightarrow) H_B + 15 \cdot 7,89 = 0$

$H_B = -118,35$

$\circlearrowleft_{EB} M_B - 118,35 \cdot 5 = 0$

$M_B = 591,75$

$M_{AC}(z_1) = -q\frac{z^2}{2} = -7,5 z^2$

$M_{AC}(z_1=0) = 0$

$M_{AC}(z_1=5) = -187,5$

$M_{CD}(z_2) = -q\frac{(h + z_2 \operatorname{sen}30)^2}{2} + V_A \cdot \cos 30 \cdot z$

$z_2 = 0 \Rightarrow -187,5$

$z_2 = 5,77 \Rightarrow -404,6$

$M_{BE}(z_3) = 118,35 \cdot z_3 - 591,75$

$z_3 = 0 \Rightarrow -591,75$

$z_3 = 5 \Rightarrow 0$

$M_{ED}(z_4) = H_B \cdot \operatorname{sen}30 \cdot z_4 + V_B \cdot z_4 \cdot \cos 30$

$z_4 = 0 \Rightarrow 0$

$z_4 = 5,77 \Rightarrow 404,6$

$T_{AC}(z_1) = -q z_1$

$z_1 = 0 \Rightarrow 0$

$z_1 = 5 \Rightarrow -75$

$T_{CD}(z_2) = -qh \cdot \operatorname{sen}\alpha - q z \cdot \operatorname{sen}^2\alpha + V_A \cdot \cos\alpha$

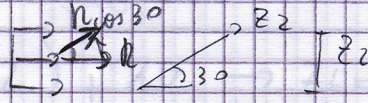
$z = 0 \Rightarrow -26,71$

$z = 5,77 \Rightarrow -48,35$

$T_{BE}(z_3) = 118,35$

$T_{ED}(z_4) = H_B \cdot \operatorname{sen}30 + V_B \cdot \cos 30 = 70$

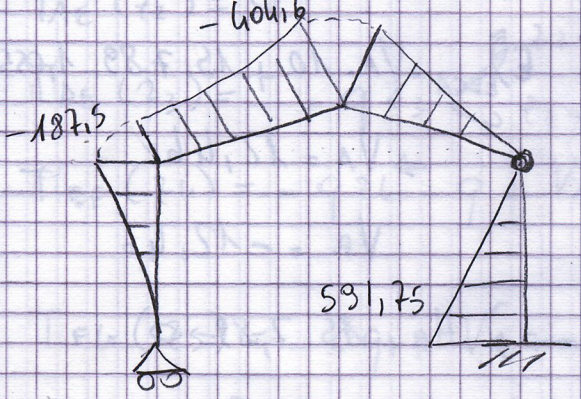
$N_{AC}(z_1) = -12,46$



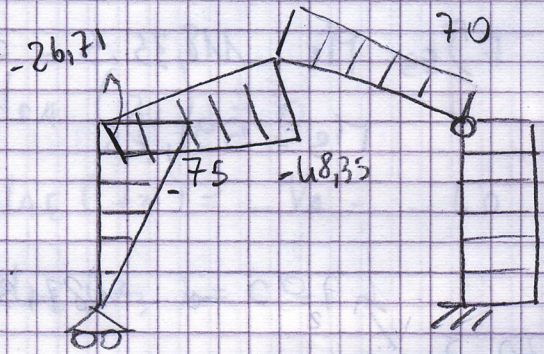
$N_{CD}(z_2) = -V_A \cdot \operatorname{sen}30 - 75 \cdot \cos 30 - q \cdot \operatorname{sen}30 \cdot \cos 30 \cdot z_2$

$N_{BE}(z_2) = +12,46$

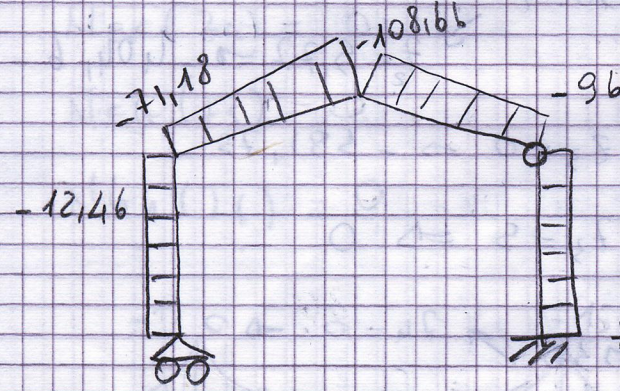
$N_{Ed}(z_u) = +V_B \cdot \sin 30 - H_B \cdot \cos 30$



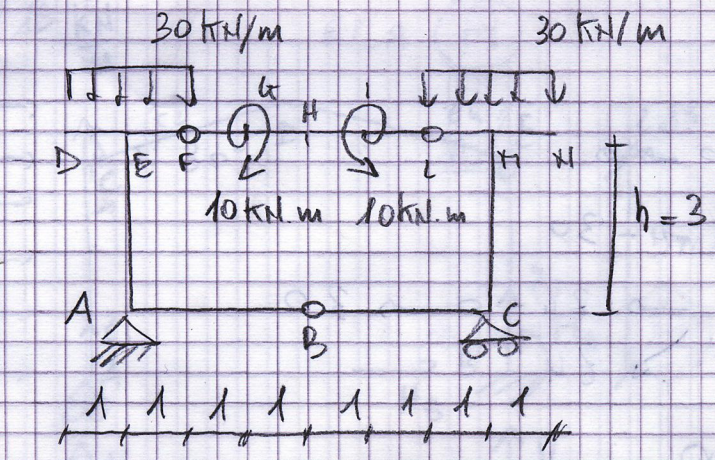
(M) [kN.m]

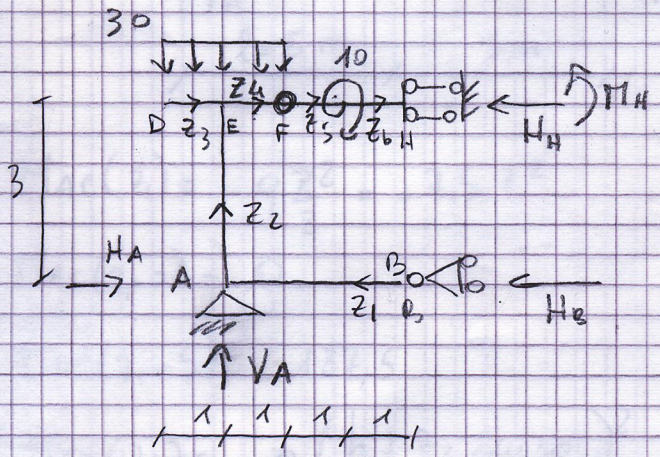


(T) [kN]



(N) [kN]





$\uparrow) V_A - 30 \cdot 2 = 0 \Rightarrow V_A = 60$

$\rightarrow) -H_B - H_H + H_A = 0$

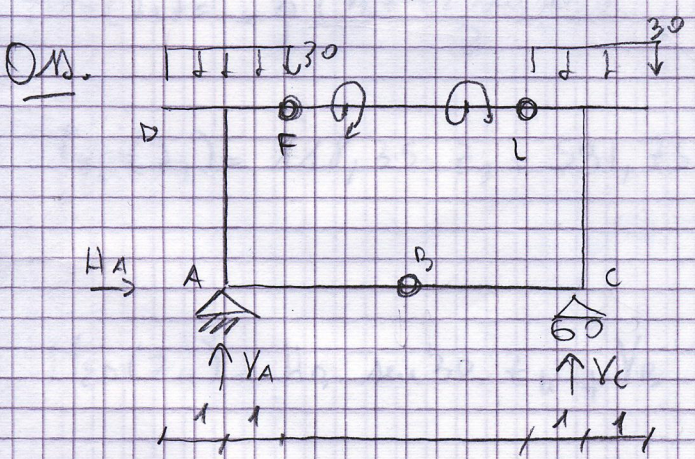
$F)_{FH} \quad -10 + M_H = 0 \Rightarrow M_H = 10$

$F)_{FAB} \quad +H_A \cdot 3 - H_B \cdot 3 + 60 - 60 = 0$

$B)_{BAEF} \quad -\underbrace{V_A \cdot 3}_{-180} + 180 + H_H \cdot 3 = 0$

$\Rightarrow H_H = 0$

$\Rightarrow H_A = H_B = 0$



OM.

$\uparrow) V_A + V_C = 120$

$\rightarrow) H_A = 0$

$M_{BA}(z_1) = 0$

$M_{AE}(z_2) = 0$

$M_{DE}(z_3) = -q \frac{z_3^2}{2} \quad \nearrow z_3 = 0 \Rightarrow 0 \quad \searrow z_3 = 1 \Rightarrow -q/2 = -15$

$M_{EF}(z_4) = -q \frac{(1+z_4)^2}{2} + V_A \cdot z_4 \quad \nearrow z_4 = 0 \Rightarrow -15 \quad \searrow z_4 = 1 \Rightarrow 0$

$M_{EF}(z_5) = -q \cdot 2 \cdot (1+z_5) + V_A \cdot (1+z_5) \quad \nearrow z_5 = 0 \Rightarrow 0 \quad \searrow z_5 = 1 \Rightarrow 0$

$M_{GH}(z_6) = -q \cdot 2 (z_6 + 2) + V_A \cdot (z_6 + 2) + 10 \rightarrow z_6 = 0 \Rightarrow +10 \quad \searrow z_6 = 1 \Rightarrow +10$

$T_{BA}(z_1) = 0$

$T_{AE}(z_2) = 0$

$T_{DE}(z_3) = -qz_3$ ↘ $z_3 = 0 \Rightarrow 0$; $z_3 = 1 \Rightarrow -30$

$T_{EF}(z_4) = -qz_4 - q + V_A$ → $z_4 = 0 \Rightarrow 30$; ↘ z_4

$T_{FG}(z_5) = -2q + V_A = 0$

$T_{GH}(z_6) = -2q + V_A = 0$

$N_{BA}(z_1) = 0$

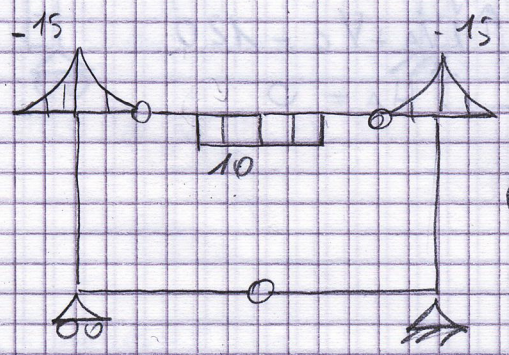
$N_{AE}(z_2) = -V_A = -60$

$N_{DE}(z_3) = 0$

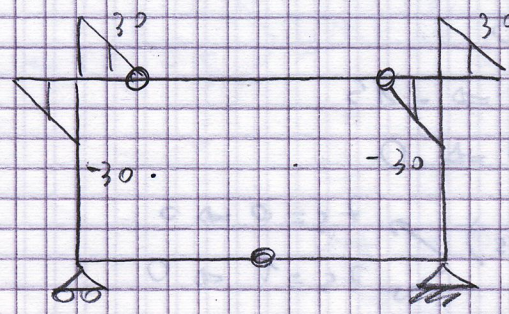
$N_{EF}(z_4) = 0$

$N_{FG}(z_5) = 0$

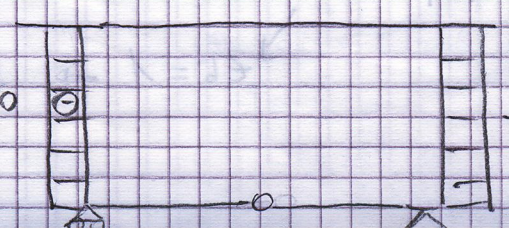
$N_{GH}(z_6) = 0$



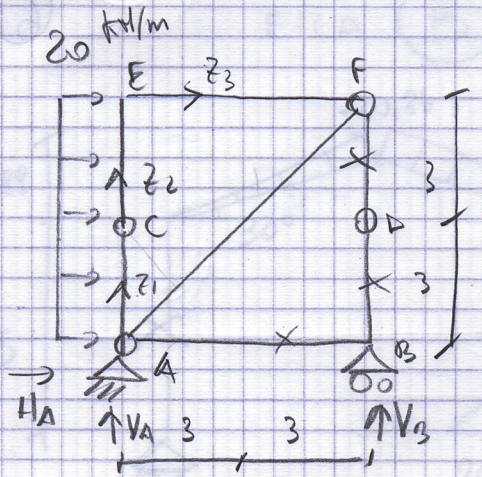
(M) [kN.m]



(T) [kN]



(N) [kN]

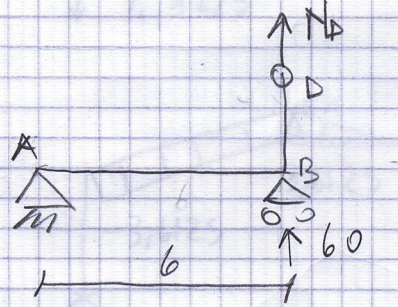


$\uparrow) \; V_A + V_B = 0$

$\rightarrow) \; H_A = -6 \cdot 20 = -120$

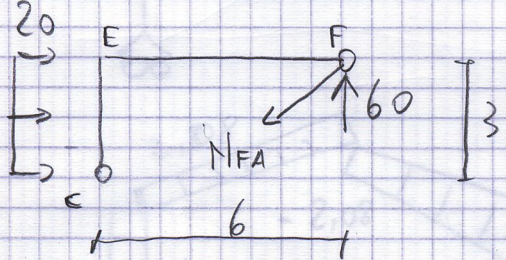
$A\uparrow \; V_B \cdot 6 - 360 = 0 \Rightarrow V_B = 60$

$V_A = -60$



$A\uparrow_{ABD} \; 360 + 6 N_D = 0$

$N_D = -60$



$C\uparrow_{CEF} \; 360 - 90 + N_{FA} \cos 45 \cdot 3 = 0$

$\Rightarrow N_{FA} = 127{,}27$

$M_{AC}(z_1) = 120 \cdot z_1 - N_{FA} \cdot \cos 45 \cdot z_1 - q \frac{z_1^2}{2}$

$z_1 = 0 \Rightarrow 0$

$z_1 = 3 \Rightarrow 0$

$z_1 = 1{,}5 \Rightarrow 22{,}5$

$M_{CE}(z_2) = 120 \cdot (3 + z_2) - N_{FA} \cdot \cos 45 \, (3 + z_2) - q \cdot \frac{(z_2 + 3)^2}{2}$

$(z_2 = 0) = 0$

$(z_2 = 3) = -180$

$M_{EF}(z_3) = -180 - V_A \cdot z_3 + N_{FA} \cdot \cos 45 \cdot z_3$

$(z_3 = 0) = -180$

$(z_3 = 6) = 0$

$T_{AC}(z_1) = 120 - N_{FA} \cdot \cos 45 - q z_1$

$T_{CE}(z_2) = 120 - N_{FA} \cdot \cos 45 - q z_2 - 3q$

$T_{EF}(33) = + V_A + N_{FA} \cdot \cos 45$

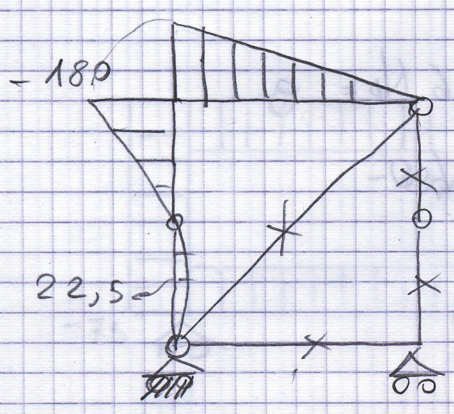
$N_{AC}(z_1) = -V_A + N_{FA} \cdot \cos 45 = -30$

$N_{CE}(z_2) = -30$

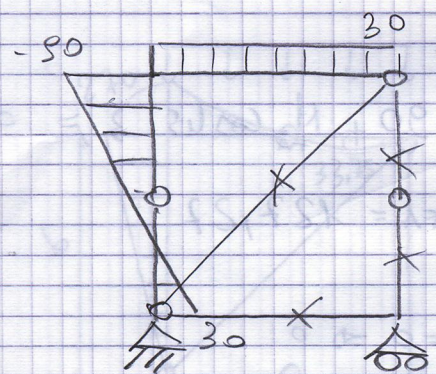
$N_{EF}(z_3) = -90$

$N_{FD} = N_{DB} = -60$

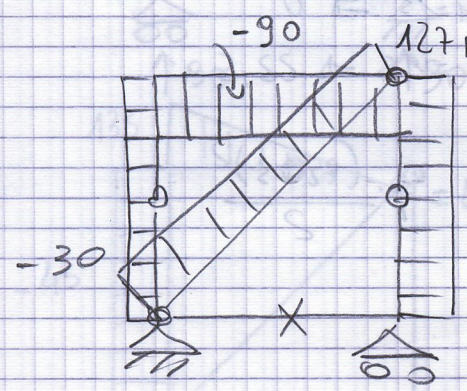
$N_{BA} = 0$



(M) [kN.m]

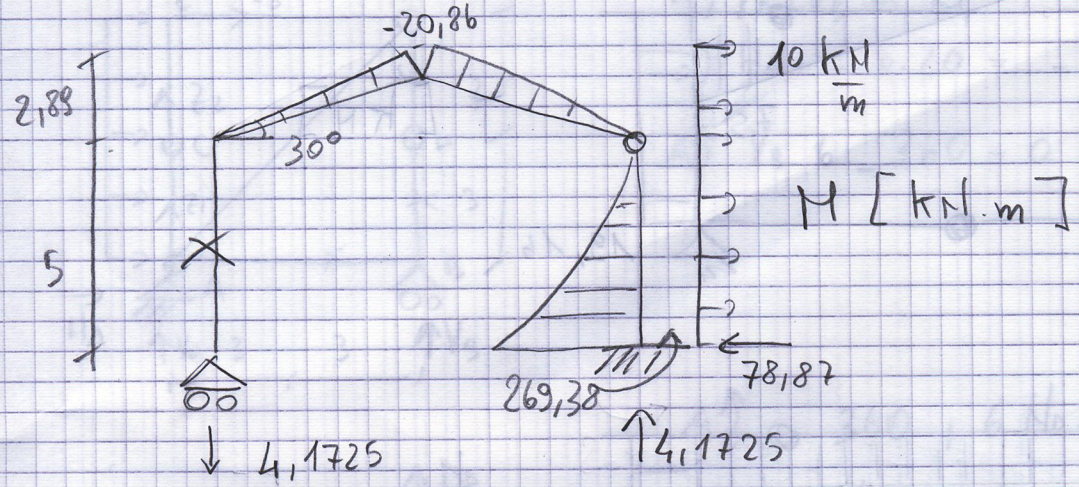


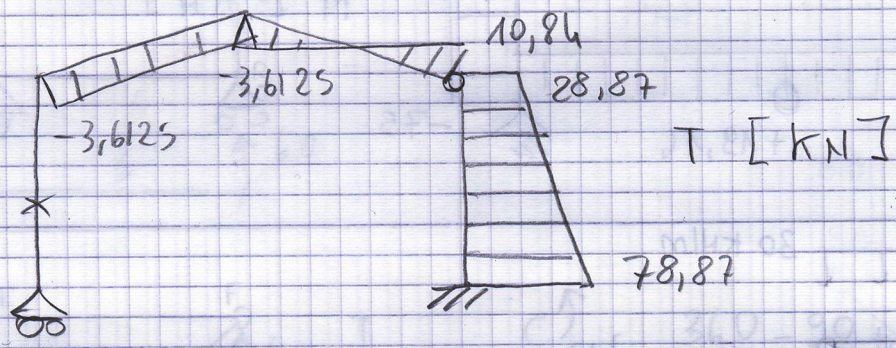
(T) [kN]

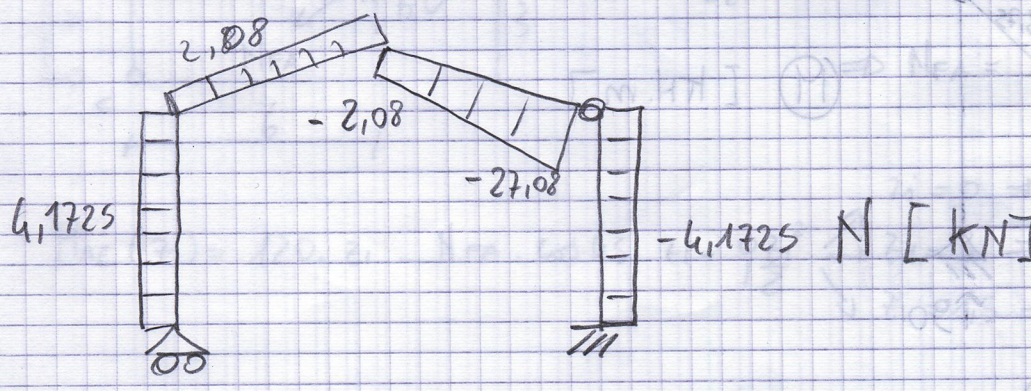


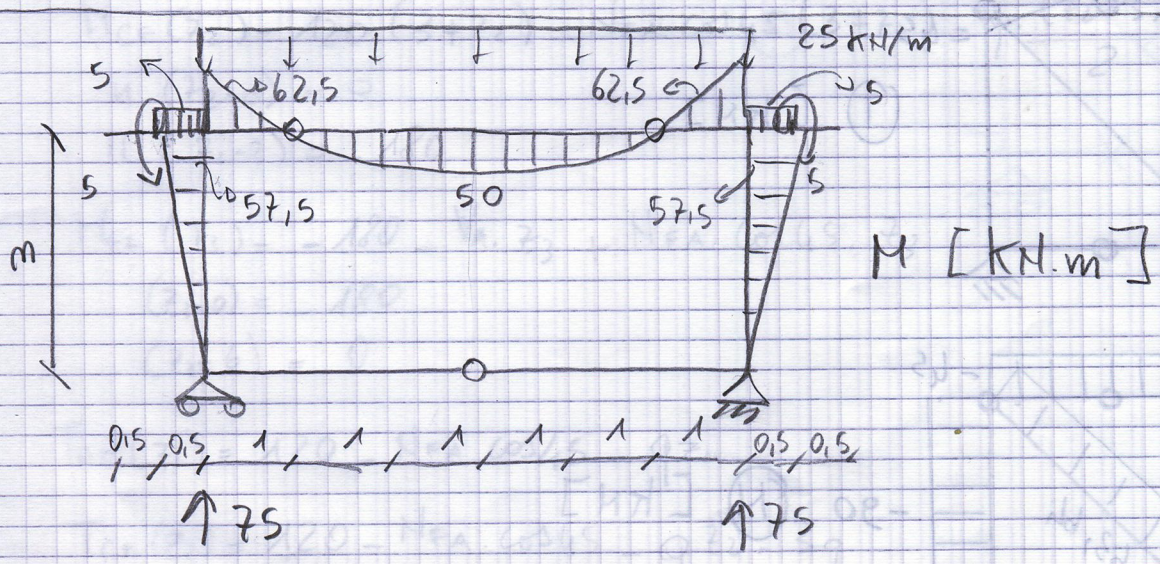
(N) [kN]

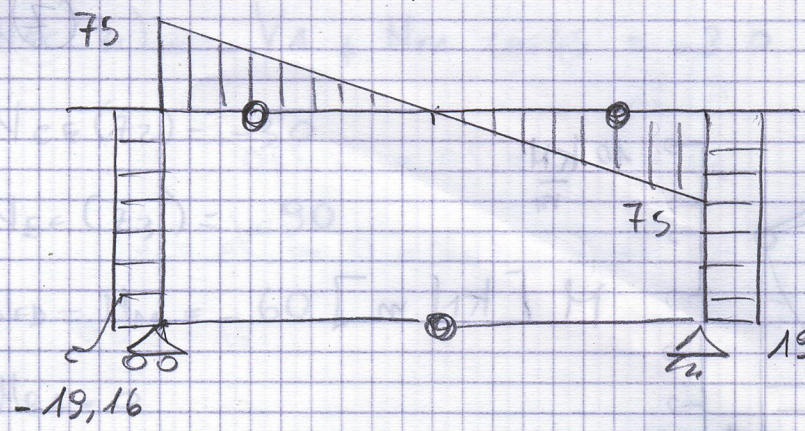
FILA (B)


-20,86
2,88
30°
5
10 kN/m
M [kN.m]
269,38
78,87
4,1725
4,1725

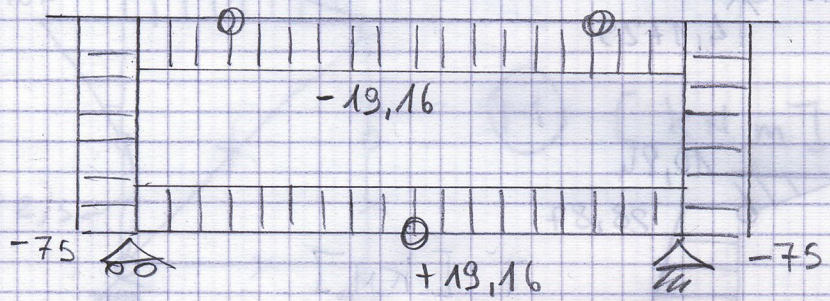

10,84
-3,6125
28,87
-3,6125
T [kN]
78,87


2,08
-2,08
-27,08
4,1725
-4,1725
N [kN]

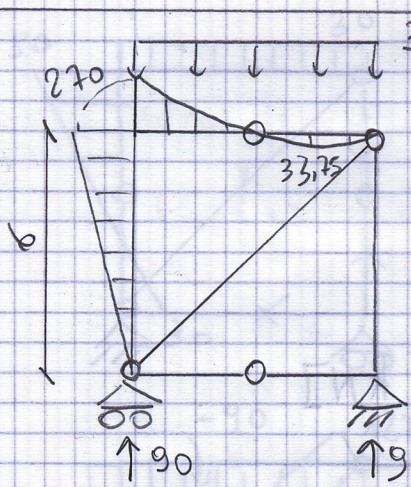

25 kN/m
5
62,5
62,5
5
5
57,5
50
57,5
5
m
M [kN.m]
0,5 0,5 1 1 1 1 1 1 0,5 0,5
75
75



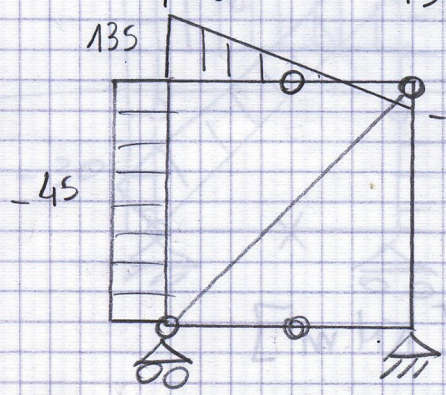
T [kN]



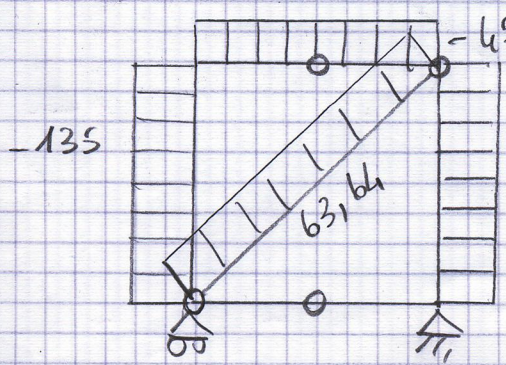
N [kN]



(M) [kN.m]



(T) [kN]



(N) [kN]