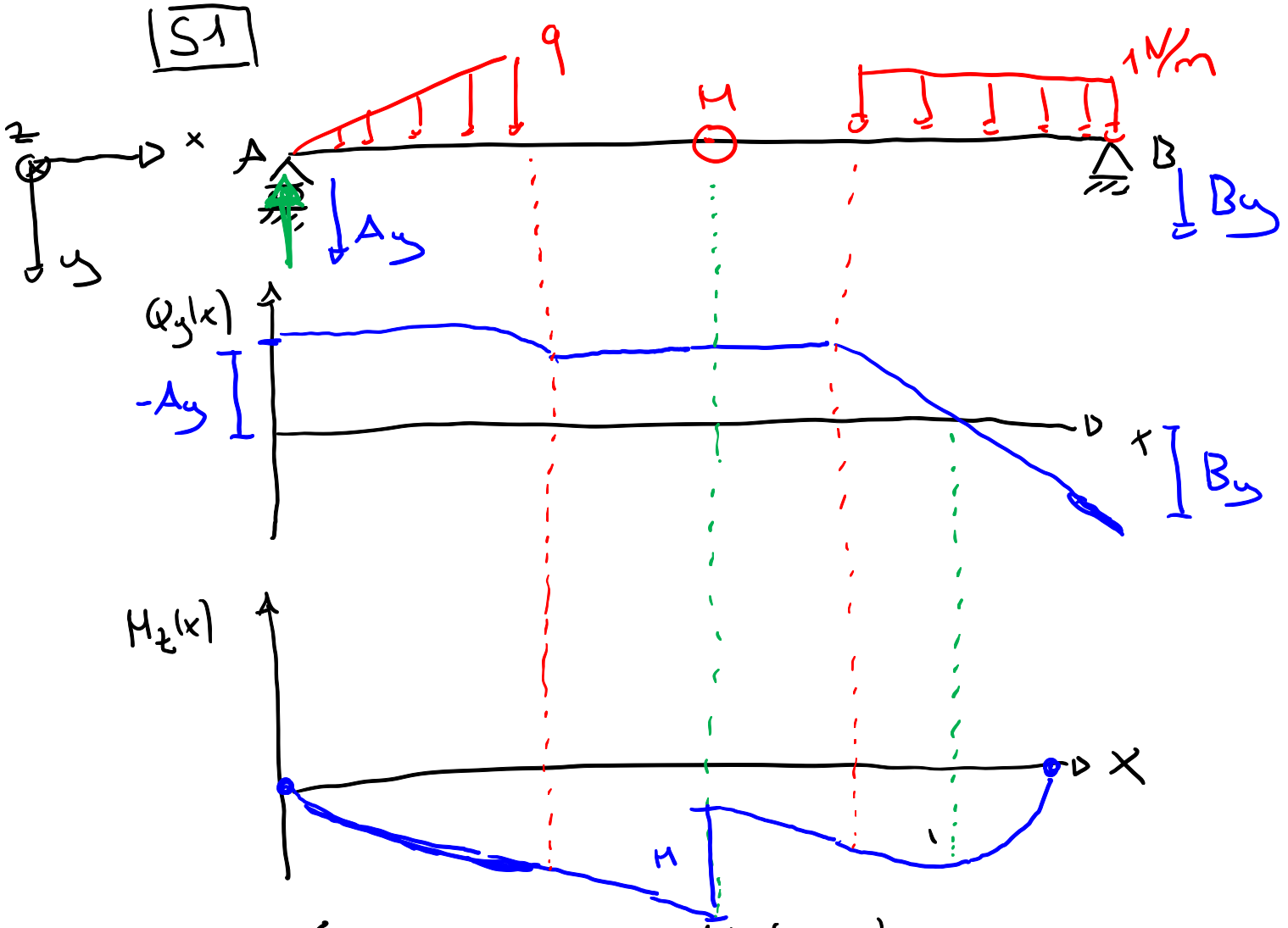
Übung 1

S1

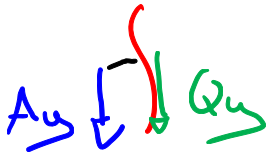


1. Lager

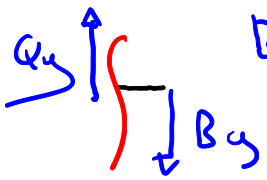
$Q_y(x=0) \neq 0$ / $M_z(x=0) = 0$

$Q_y(x=L) \neq 0$ / $M_z(x=b) = 0$

2. Lagerreaktion:



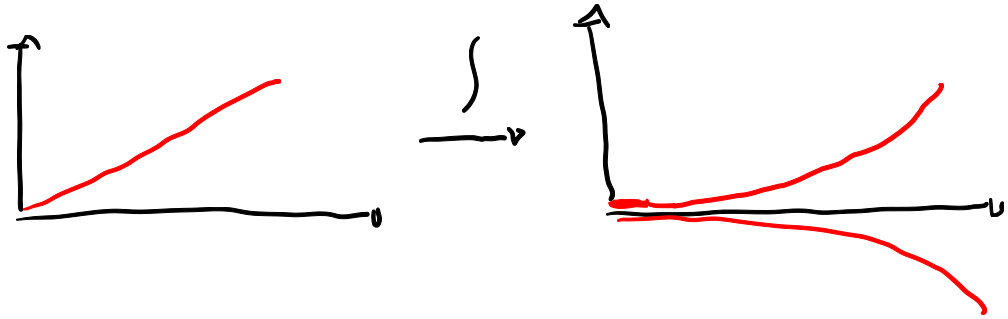
$A_y = -Q_y(x=0)$

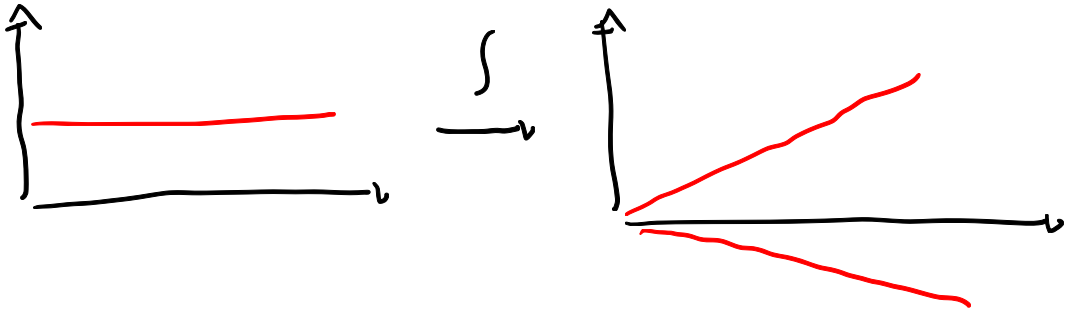


$B_y = Q_y(x=L)$

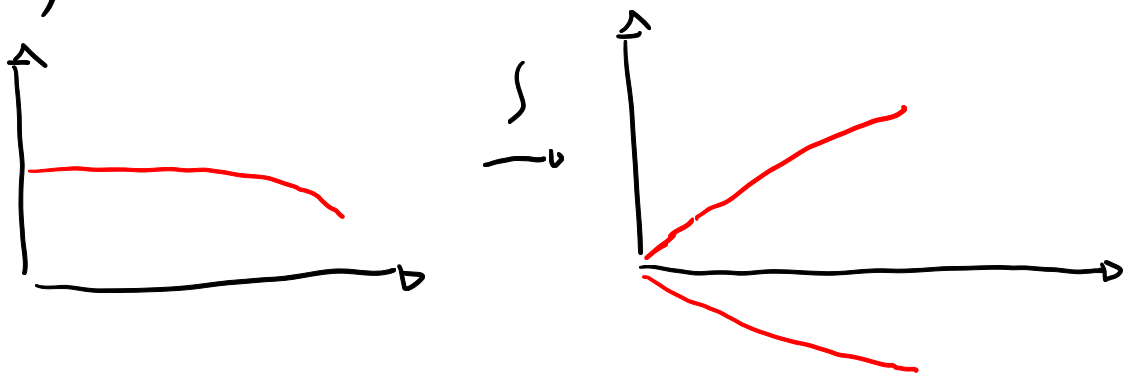
3. Differentialbeziehungen:

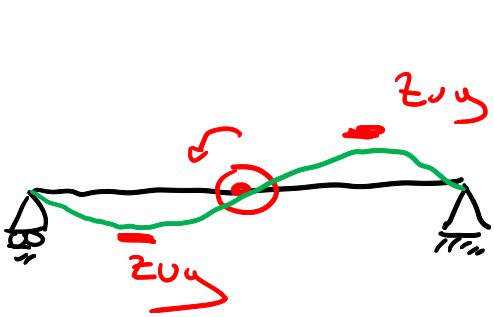
$$Q_y = -\int q_y \, dx + c_1$$

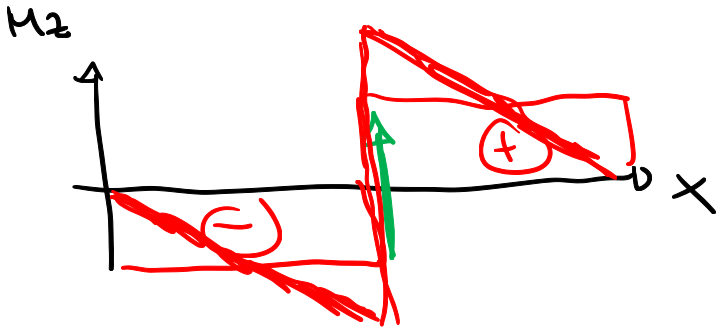




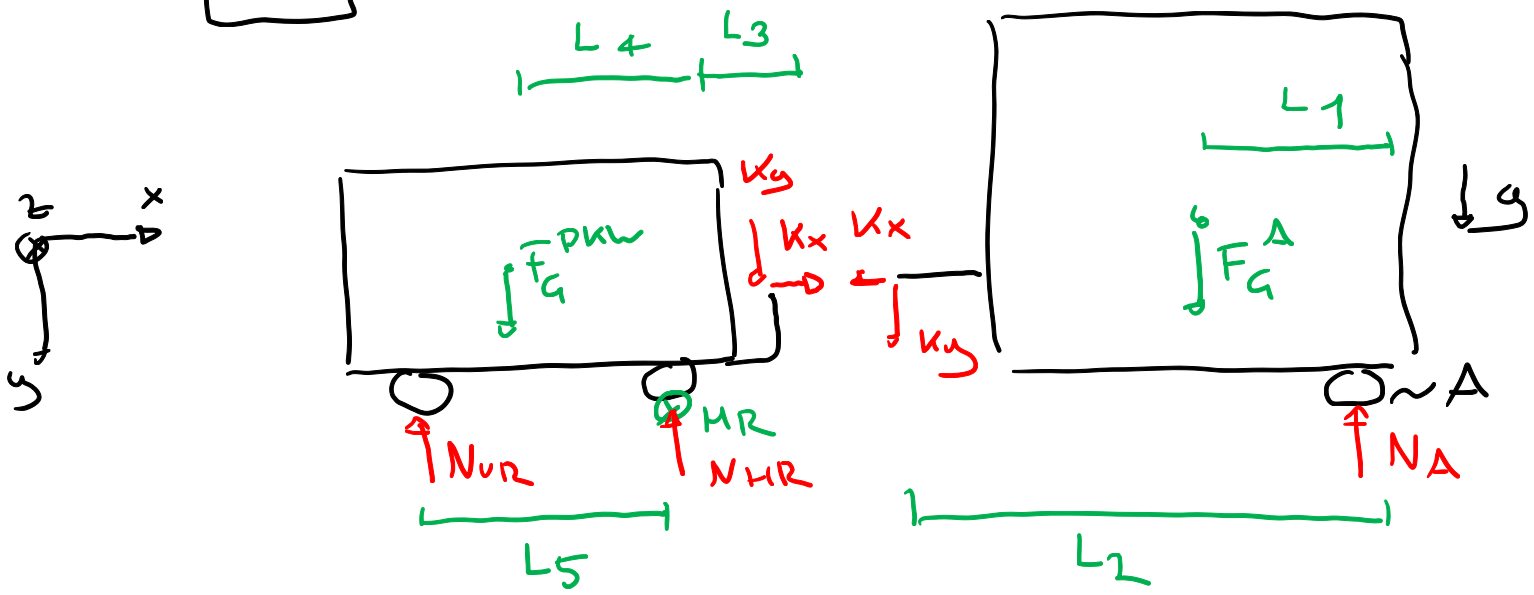
$$M_z = -\int Q_y \, dx + C_2$$







S2



↳ nicht abhebt: $N_{VR} > 0$

↳ 2D

↳ GGB am Anhänger:

$\sum F_x: \; K_x = 0$

$\sum M_z^{\text{im A}}: \; -F_G^A L_1 + K_y L_2 = 0$

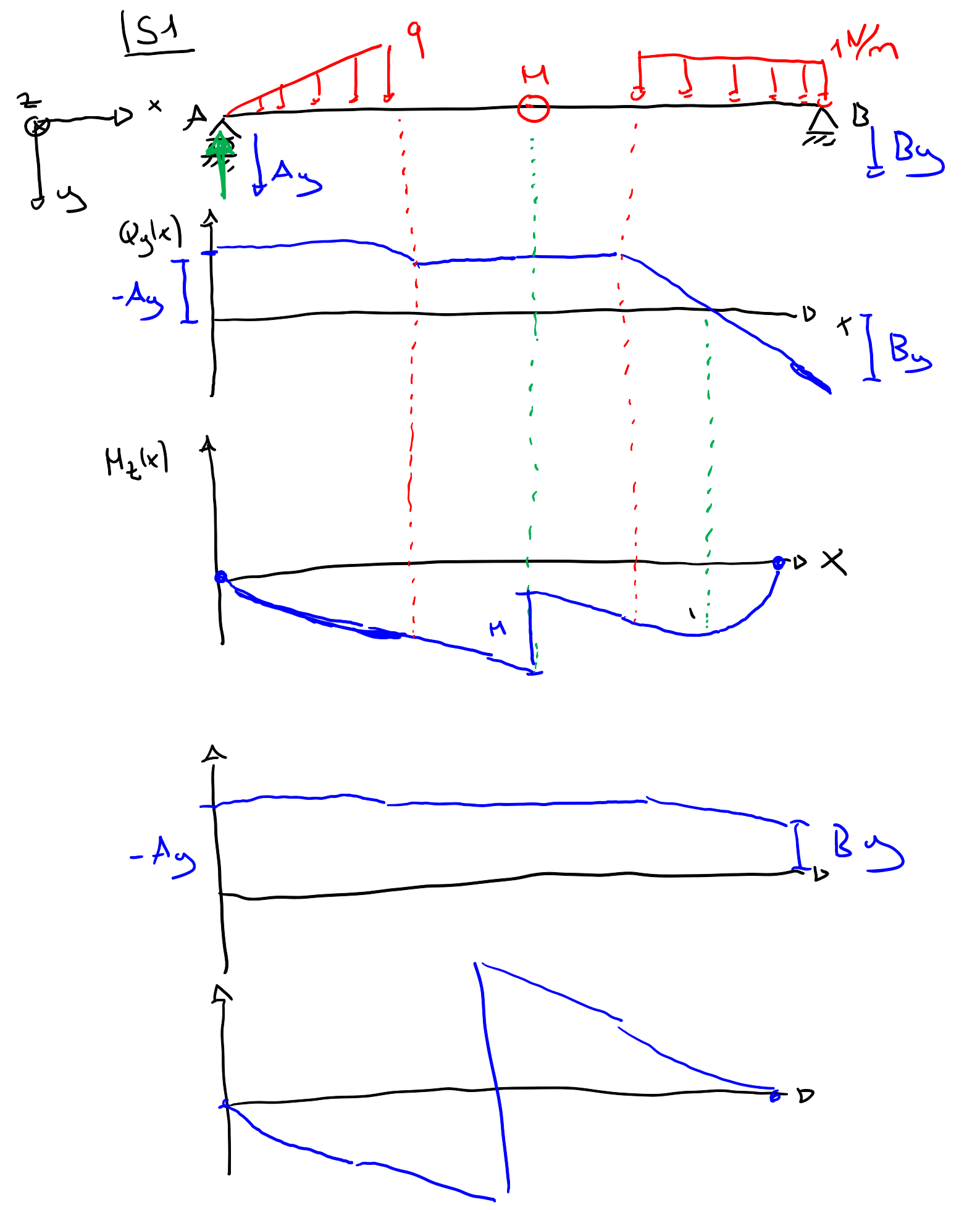
$$\Rightarrow K_y = \frac{F_G^A L_1}{L_2}$$

↳ GGB am PKW:

$\sum M_z^{\text{im HR}}: \; K_y L_3 - F_G^{PKW} L_4 + N_{VR} L_5 + M_R = 0$

$$\Rightarrow N_{VR} = \frac{F_G^{PKW} L_4 - K_y L_3 - M_R}{L_5}$$

$$= 375\ N$$


S1
q
M
1 N/m
z
x
y
A
B
A_y
B_y
$Q_y(x)$
$-A_y$
x
B_y
$M_z(x)$
x
M
$-A_y$
B_y