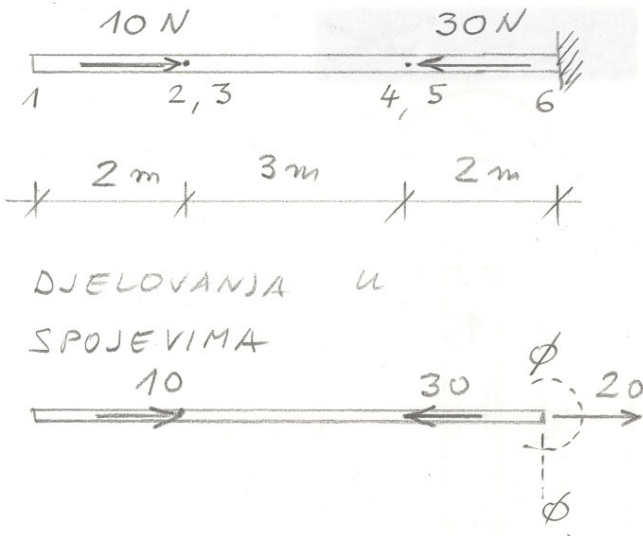


1)



DJELOVANJA U  
SPOJEVIMA

KARAKTERISTIKE UZDUŽNE SILE

NA RAVNU KONZO-  
LU DJELUJU DVIJE  
KONCENTRIRANE  
SILE DUŽ OSI.

HVATIŠTA SU  
IZMEĐU TOČAKA 2,3  
I TOČAKA 4,5. U

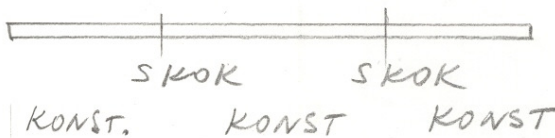
OVOM SLUČAJU ZA  
CIJELI ŠTAP

VRIJEDI  $M=0, T=0.$

$f(x)=\phi; N$  PO

ODSJECIMA KONST.

$N_1 = \phi$



$N_6 = +20$

ZA PODRUČJE (1,2)

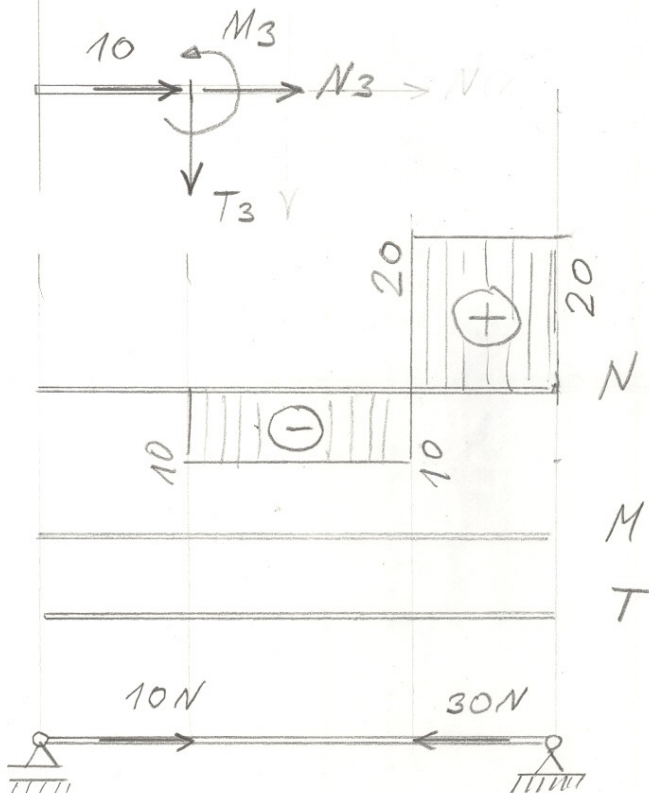
$N = \phi$

ZA (5,6) OČITO  $+20.$

ZA PODRUČJE (3,4)

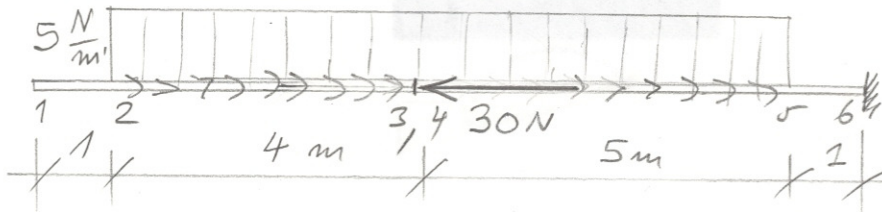
DOVOLJNO JE ODRE-  
DITI  $N_3$ , OČITO:

$N_3 = -10. (TLAK)$



ZA OVAJ SUSTAV  
DIJAGRAMI SU  
POTPUNO JEDNAKI.

2)

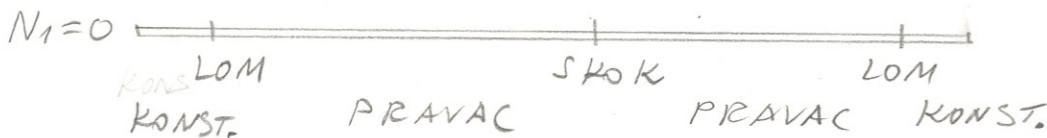


DJELUJE  
KONST. LIN  
SILA DUŽ  
OS  $f(x) = +5$   
i KONC SILA  
IZMEĐU 3 i 4.

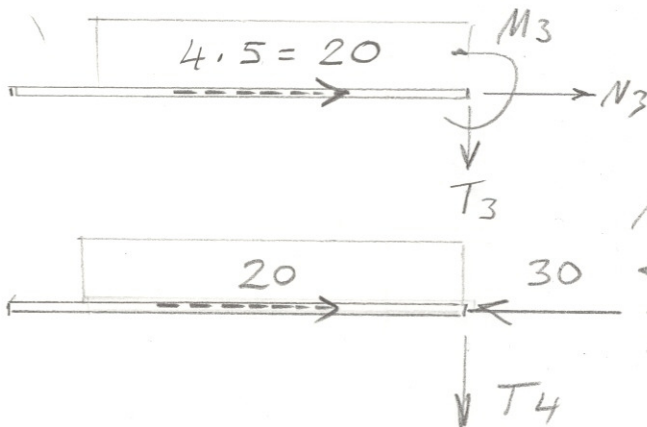
i OVDJE VRIJEDI:  $M=0, T=0$  ZA CIJELI ŠTAP.

NA KONZOLI SE SVE UNUTARNJE SILE MOGU ODRE-  
DITI I BEZ PRETHODNOG ODREĐIVANJA  
DJELOVANJA U KRUTOM SPOJK (UPETOM KRAJLL).

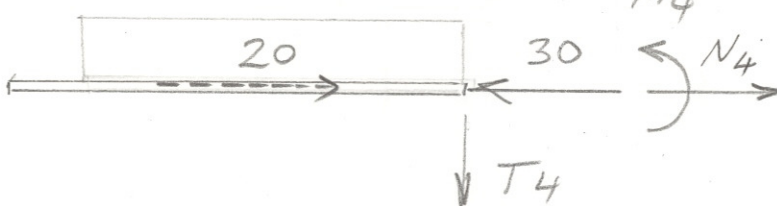
a) KARAKTERISTIKE UZDUŽNE SILE



OČITO ZA  
PODRUČJE  
(1,2)  $N=0$

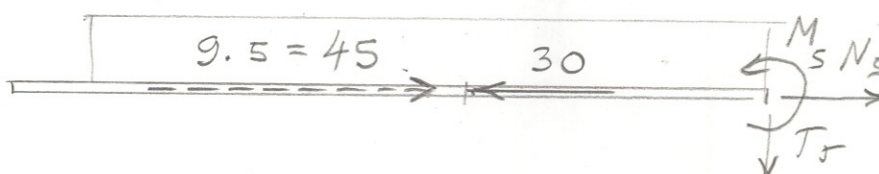


$$N_3 = -20$$



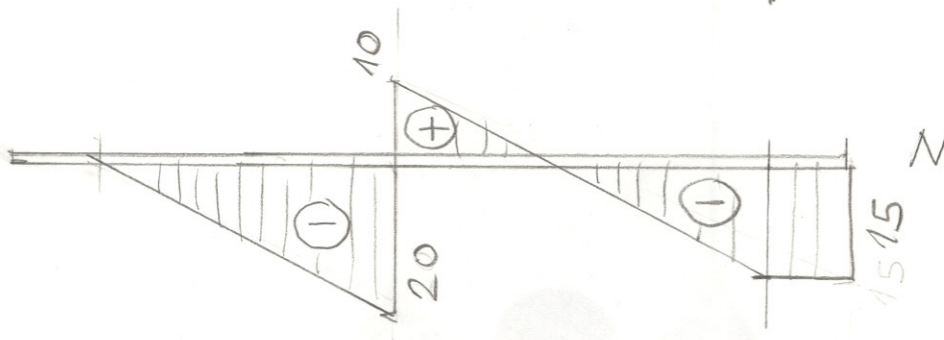
$$N_4 = 30 - 20 = +10.$$

ZBOG ISTOG  
PRAVCA  $N_4$   
JE PRIKAZAN  
DESNO OD SILE  
VANJSKE SILE.



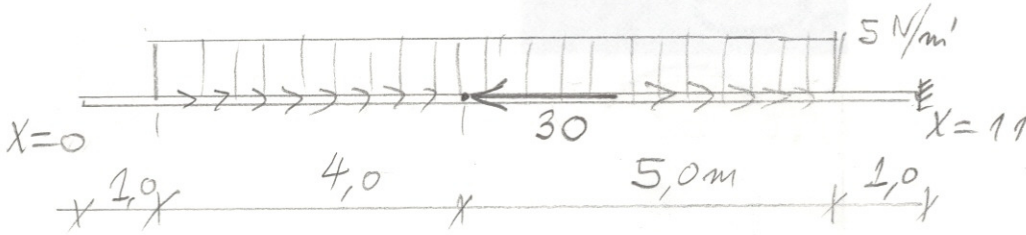
$$N_5 = -15.$$

ZA PODRUČJE  
(5,6)  $N = -15.$

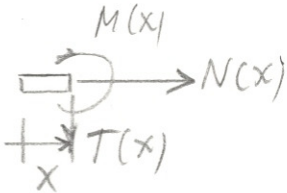


$M, T$   
NISU  
PRIKAZANI.

ANALITIČKI IZRAZI.

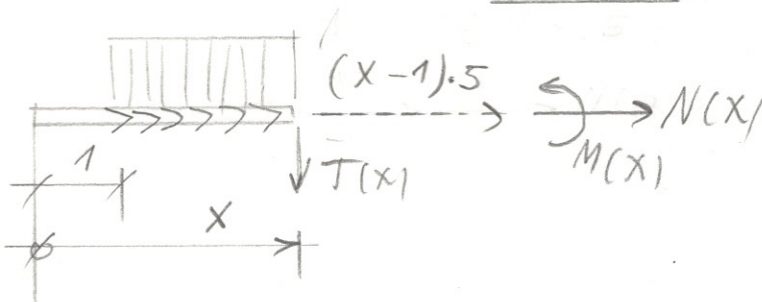


HVATIŠTE  
KONCENTRIRANA  
NE SILE JE  
U TOČKI  
 $x = +5,0 \text{ m}$ .



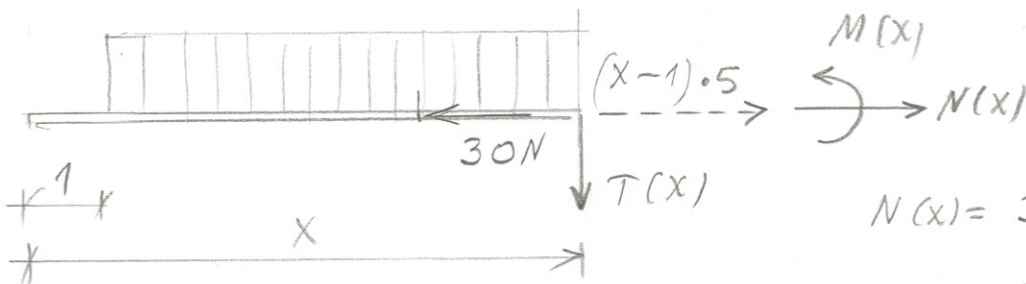
$0 \leq x \leq 1$   
 $N(x) = 0$

$1 \leq x < 5$



$N(x) = 5 - 5x$

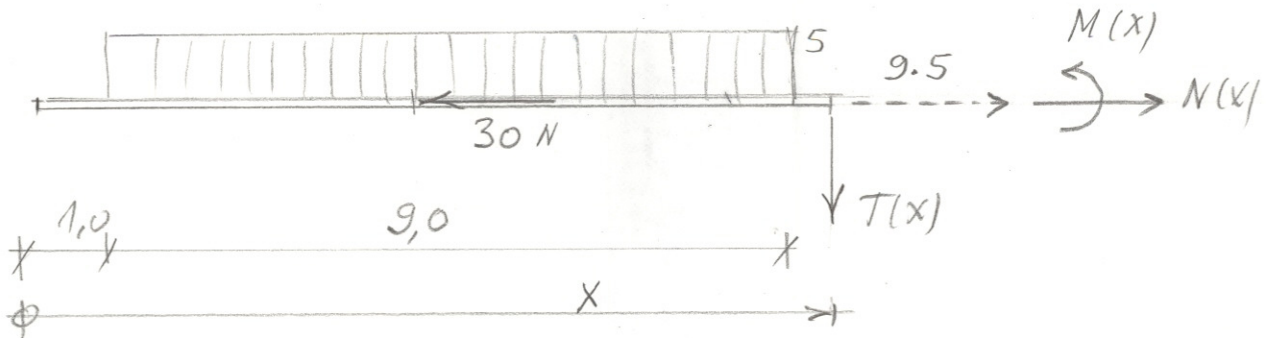
$5 < x \leq 10$



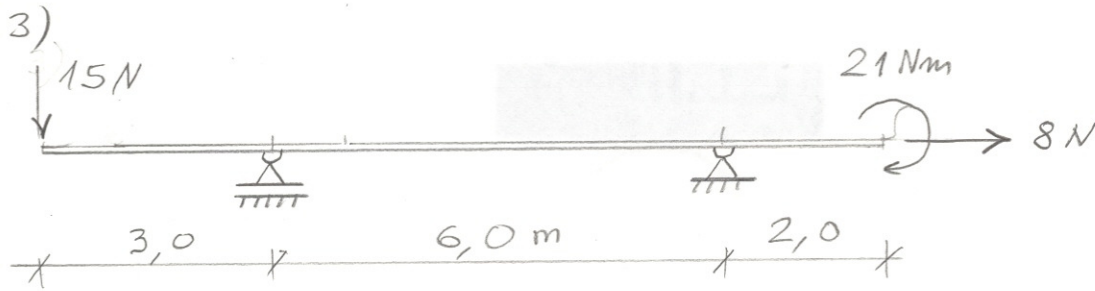
$N(x) = 30 - (x-1) \cdot 5$

$N(x) = 35 - 5 \cdot x$

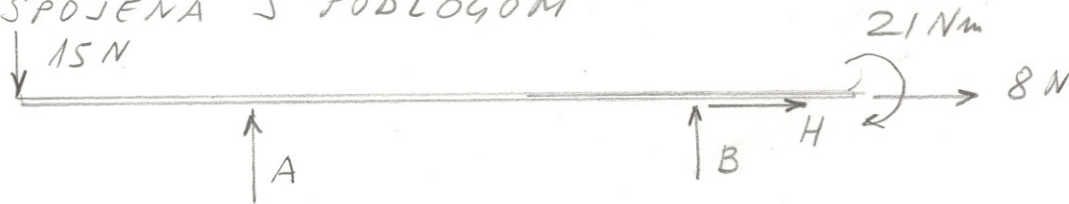
$10 \leq x \leq 11$



$N(x) = 30 - 9.5 = -15,0 \text{ N}$

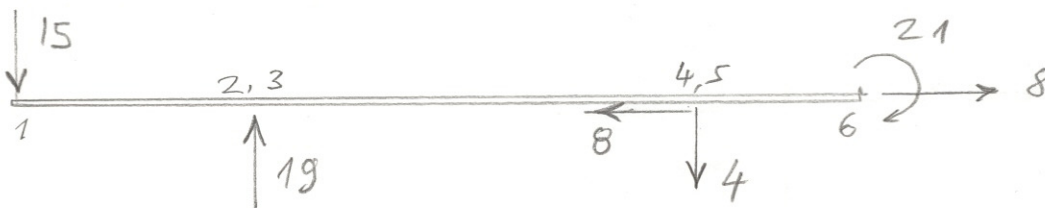


PROMATRA SE GREDA S DVA PREPUSTA, KOJA JE POMOĆU POMIČNOS I NEPOMIČNOS POLUŽGLOBA SPOJENA S PODLOGOM



$$A = \frac{9 \cdot 15 - 21}{6} = 19; \quad B = \frac{-3 \cdot 15 + 21}{6} = -4; \quad H = -8$$

STVARNA DJELOVANJA



LIJEVI KRAJ = PRESJEK 1.

DIREKTNO VIDLJIVO:  $M_1 = \phi$ ;  $T_1 = -15$ ;  $N_1 = \phi$

DESNI KRAJ = PRESJEK 6.

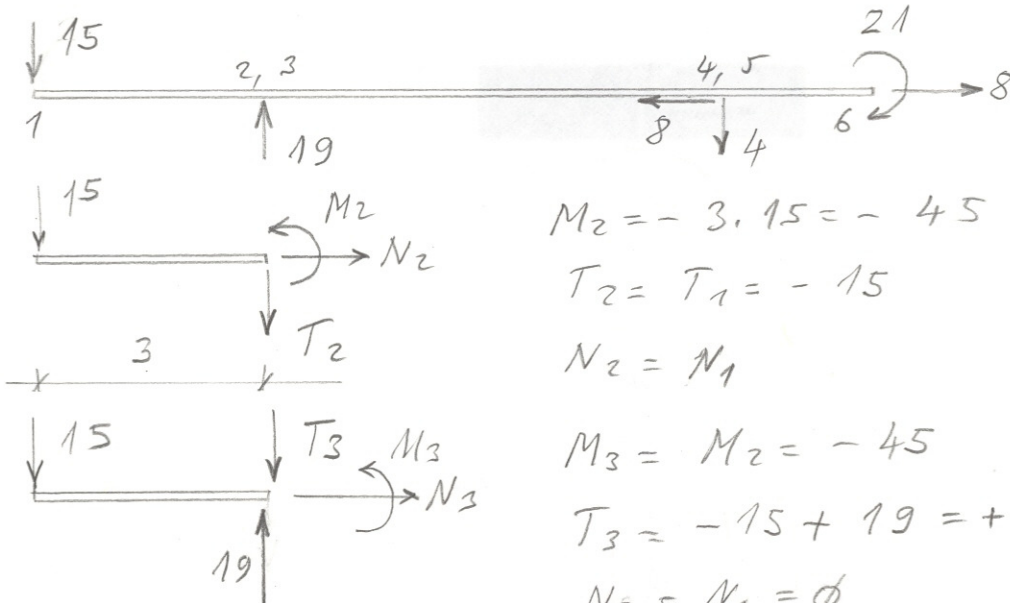
DIREKTNO VIDLJIVO:  $|M_6| = 21$  (VLAK GORE)

$T_6 = \phi$ ;  $N_6 = +8$  (VLAK)

PREDZNAK ZA  $M_6$  NIJE NAVEDEN JER NIJE PRIKAZAN POZITIVAN SMISAO. ZA HORIZONTALNE RAVNE ŠTAPOVE SE U PRAVILU UVODI KAO POZITIVAN MOMENT SAVIJANJA KOJI ZATEŽE DOLJE.

KARAKTERISTIKE MOM. SAVIJANJA:

LOM	LOM	LOM	SKOK
PRAVAC	PRAVAC	KONST.	



$$M_2 = -3 \cdot 15 = -45 \text{ (VLAK GORE)}$$

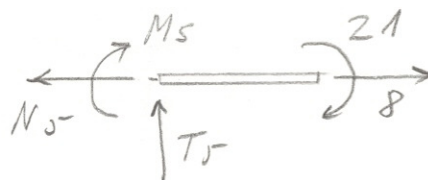
$$T_2 = T_1 = -15$$

$$N_2 = N_1$$

$$M_3 = M_2 = -45$$

$$T_3 = -15 + 19 = +4$$

$$N_3 = N_1 = \phi$$



$$M_5 = -21$$

$$T_5 = \phi$$

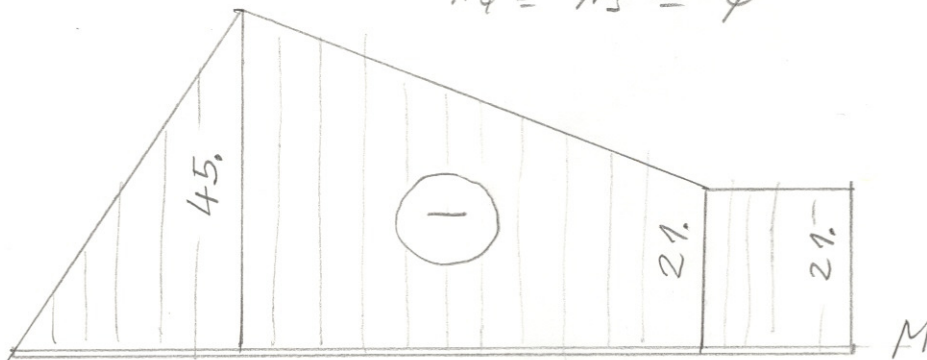
$$N_5 = +8$$

PRESJEK 4

$$M_4 = M_5 = -21$$

$$T_4 = T_3 = +4$$

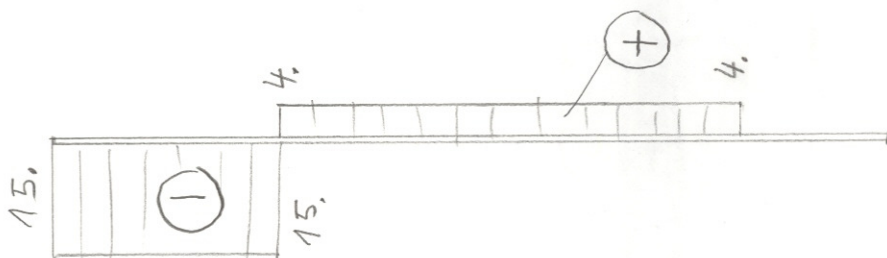
$$N_4 = N_3 = \phi$$



MJERILO  
ORDINATA

1 cm :: 10 Nm

M



MJERILO  
ORDINATA

1 cm :: 10 N

T

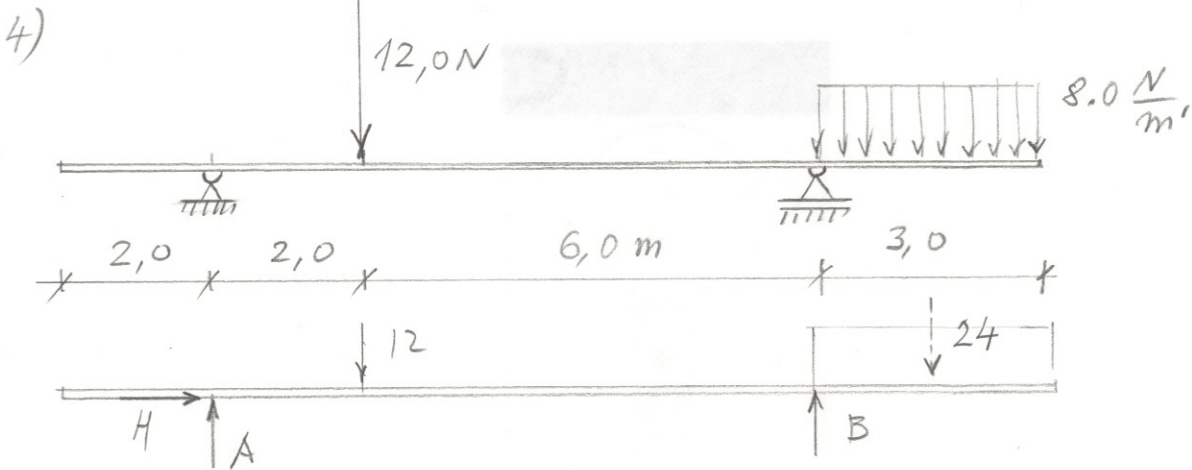


MJERILO  
ORDINATA

1 cm :: 10 N

N

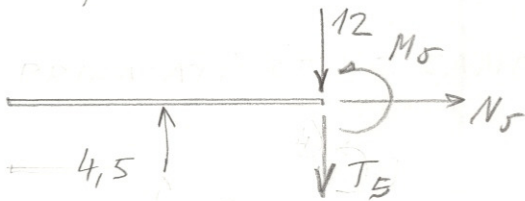
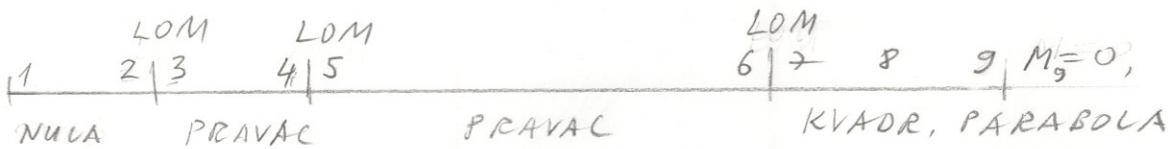
KONTROLA ZA PODRUČJE (3,4):  $\frac{dM}{dx} = \frac{-21 - (-45)}{6} = +4 \checkmark$



$$A = \frac{6 \cdot 12 - 1,5 \cdot 24}{8} = +4,5; \quad B = \frac{2 \cdot 12 + 9,5 \cdot 24}{8} = 31,5$$

KONTROLA  $\sum F_{yi} = 4,5 - 12 + 31,5 - 24 = \phi; \quad H = \phi.$

KARAKTERISTIKE MOMENTA SAVIJANJA

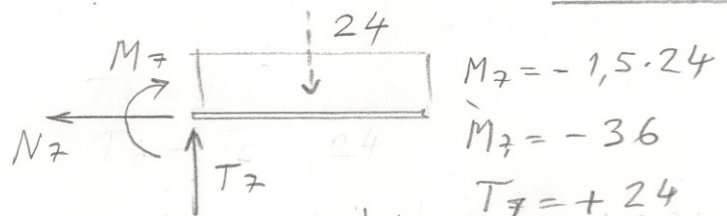


$$M_5 = 2,4,5 = 9,0 = M_4$$

$$T_5 = 4,5 - 12 = -7,5$$

$$M_6 = M_7$$

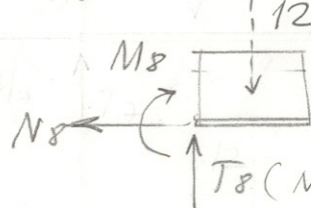
$$T_6 = T_5$$



$$M_7 = -1,5 \cdot 24$$

$$M_7 = -36$$

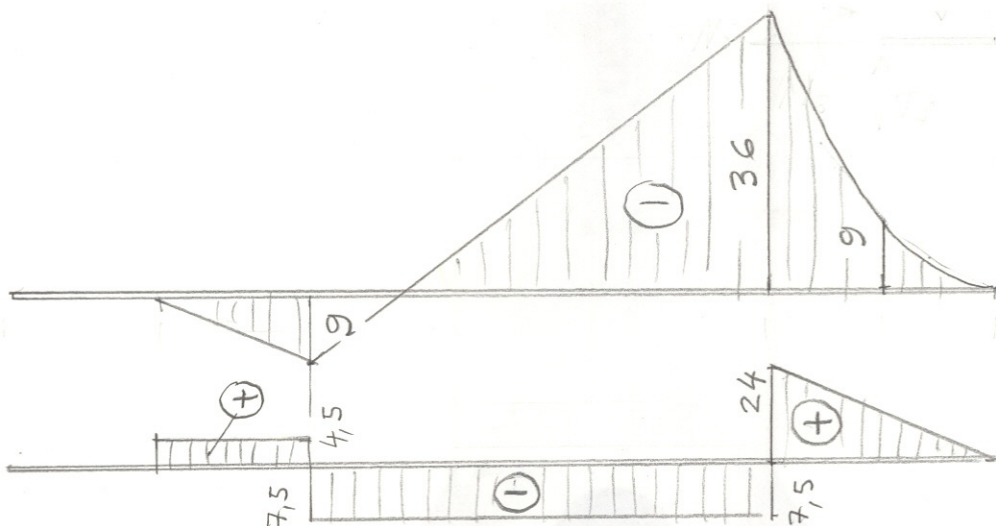
$$T_7 = +24$$



$$M_8 = -0,75 \cdot 12$$

$$M_8 = -9$$

$T_8$  (NETREBA)



KONTROLA

ZA (5, 6)

$$\frac{dM}{dx} = \frac{-36 - 9}{6}$$

$$\frac{dM}{dx} = -7,5 \checkmark$$

PRIKAZ NEKIH OSNOVNIH SLUČAJEVA

