ZADATAK:

Potrebno je odrediti silu u štapu AB, te sile u užetima AC i AD.

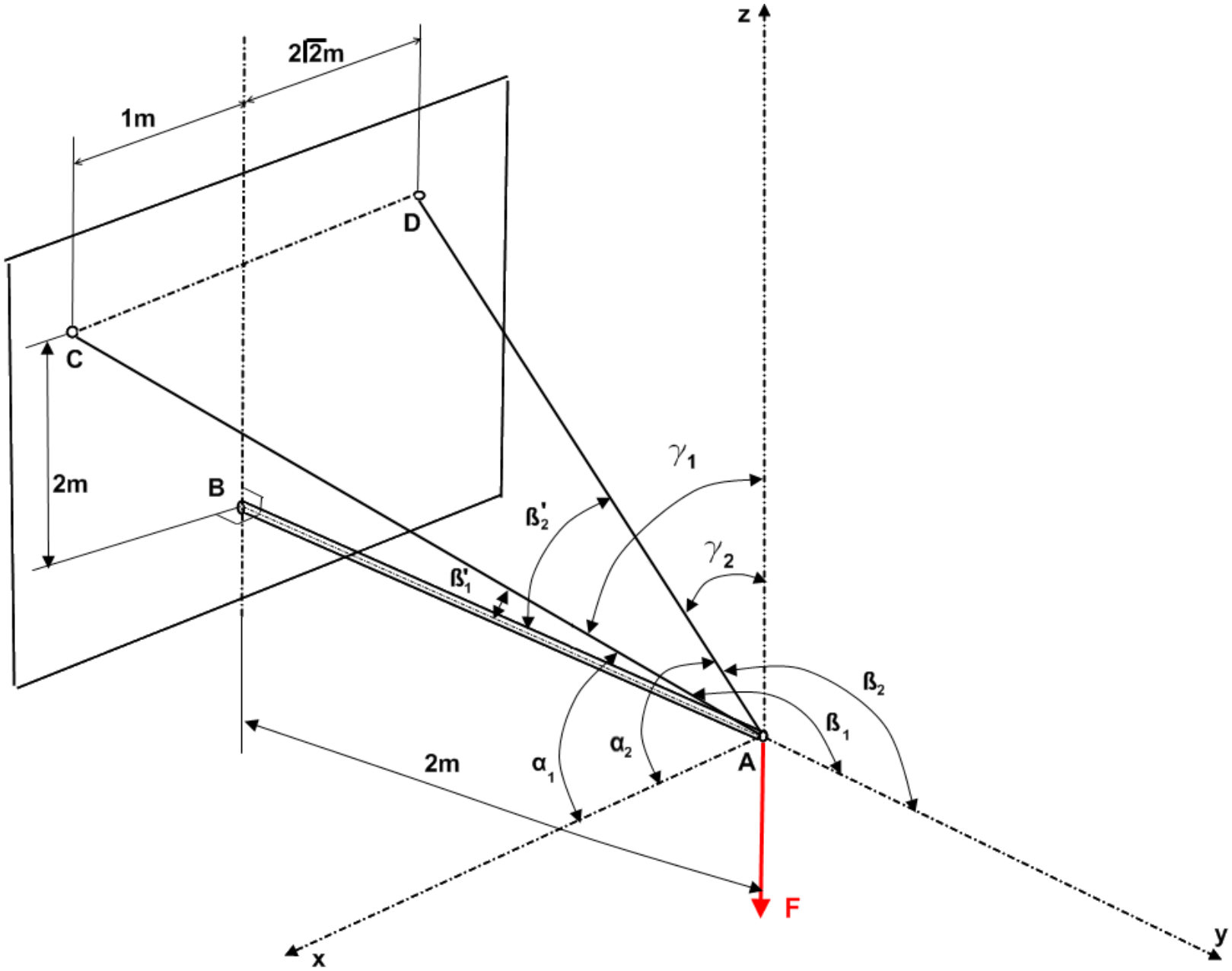
Zadano: F=230 N

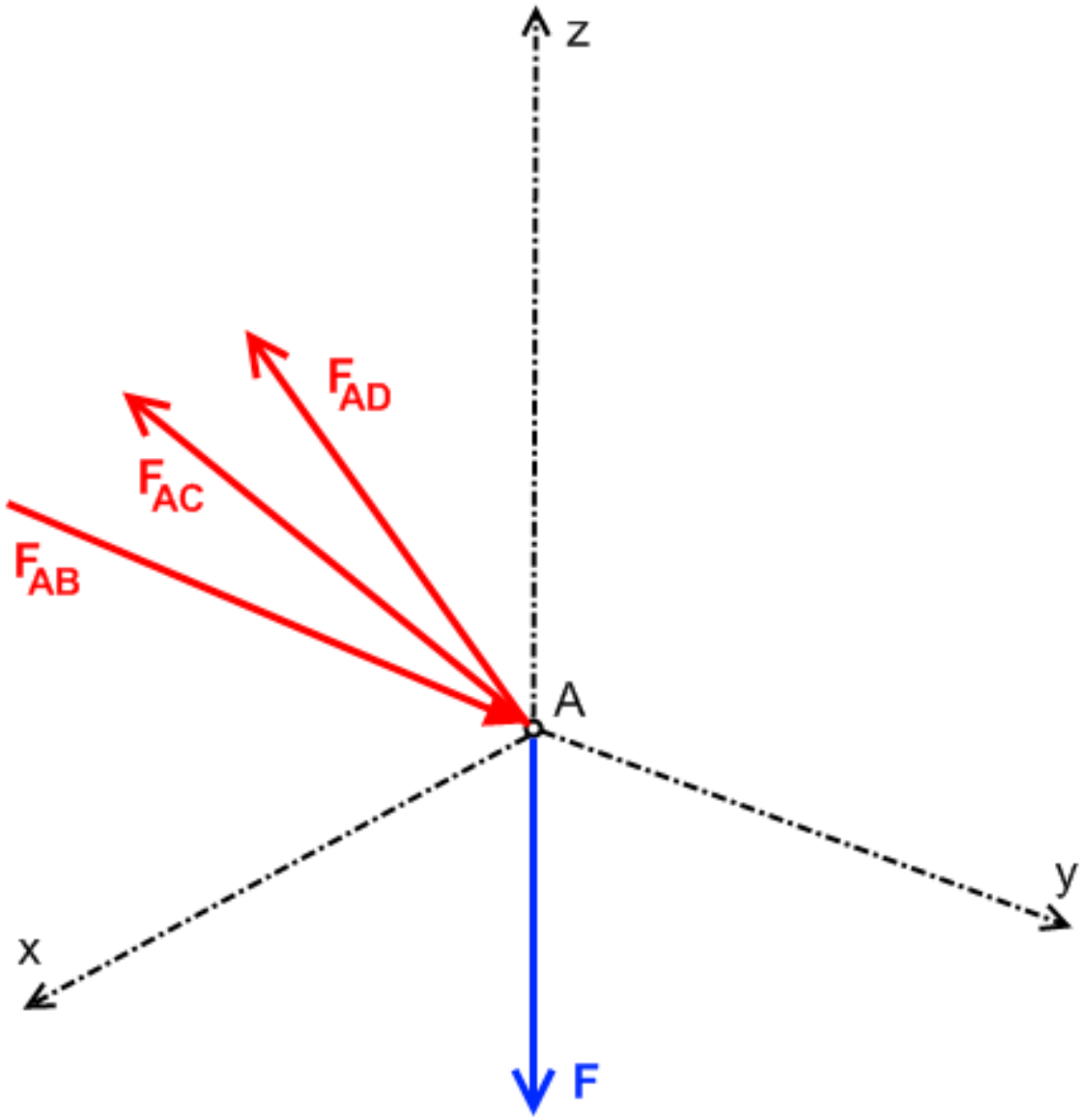
Rješenja:

F_{AB}=230 [N]

F_{AC}=254.88 [N]

F_{AD}=120.15 [N]


z
2√2m
1m
D
C
2m
B
γ1
ß2'
γ2
ß1'
ß2
ß1
α2
α1
2m
A
F
x
y


z
F_{AD}
F_{AC}
F_{AB}
A
y
x
F

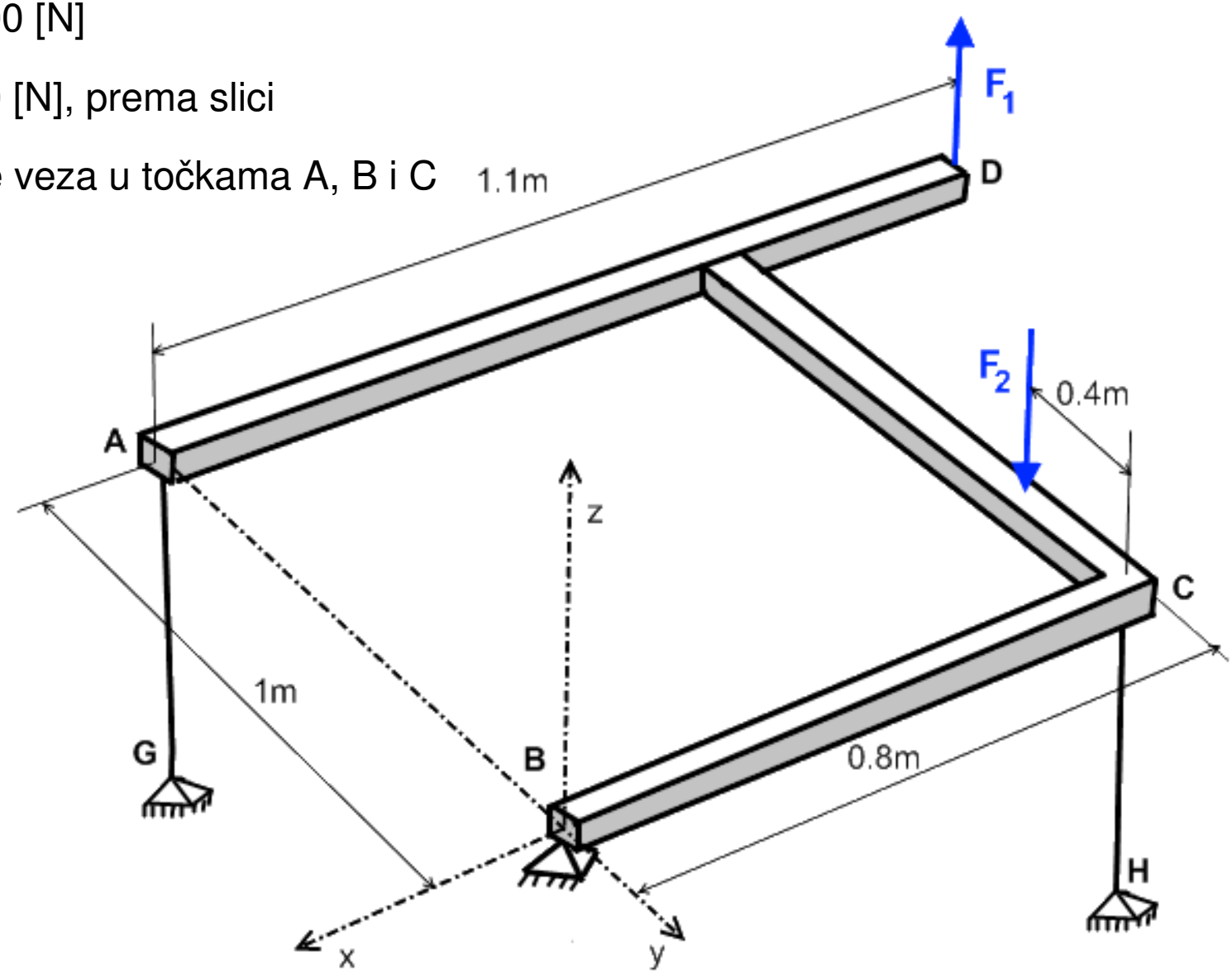
ZADATAK:

Na kruti horizontalni okvir, zanemarive težine djeluju paralelne sile:

F_1=1000 [N]

F_2=600 [N], prema slici

Odrediti reakcije veza u točkama A, B i C

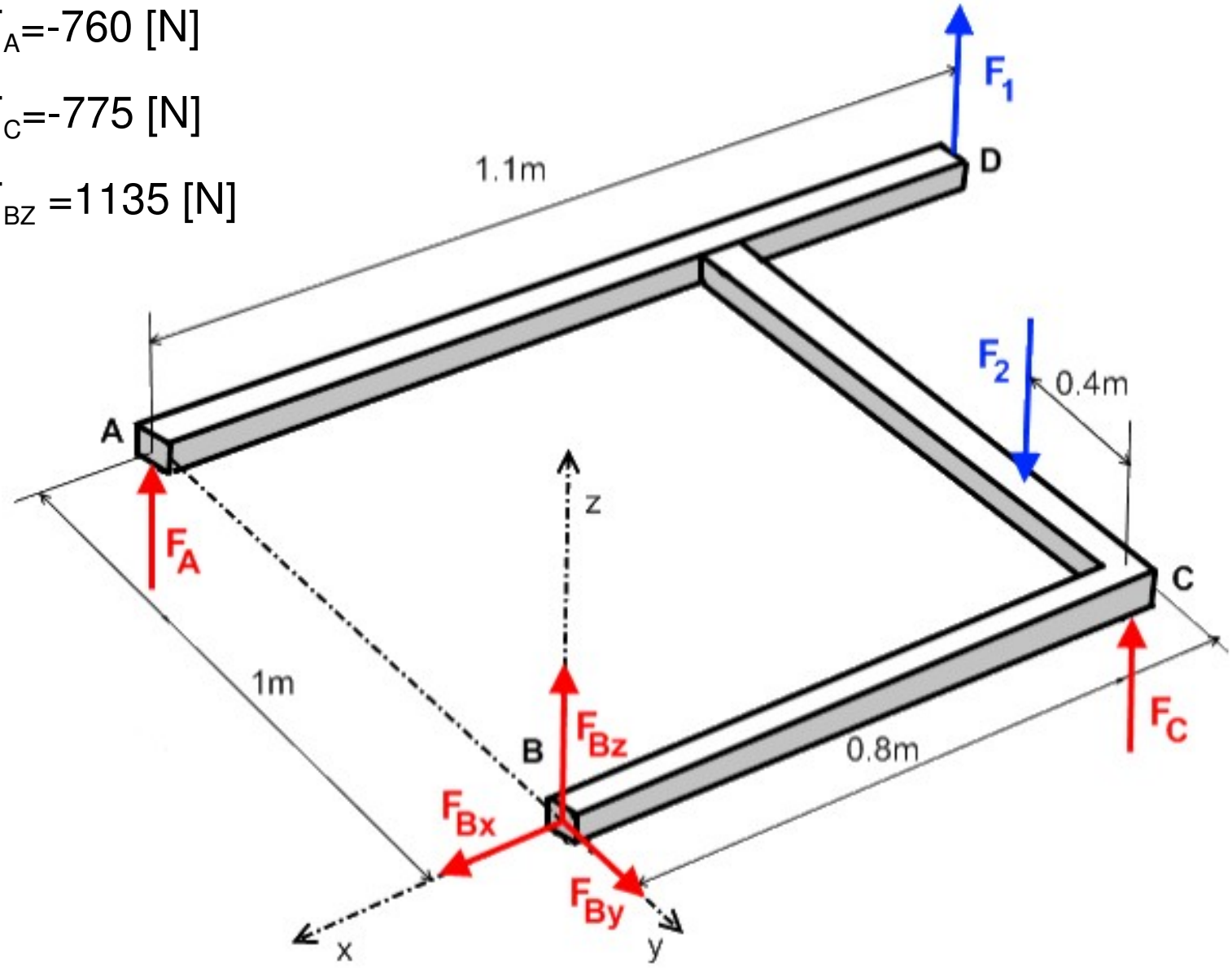


Rješenje:

F_A=-760 [N]

F_C=-775 [N]

F_{BZ} =1135 [N]

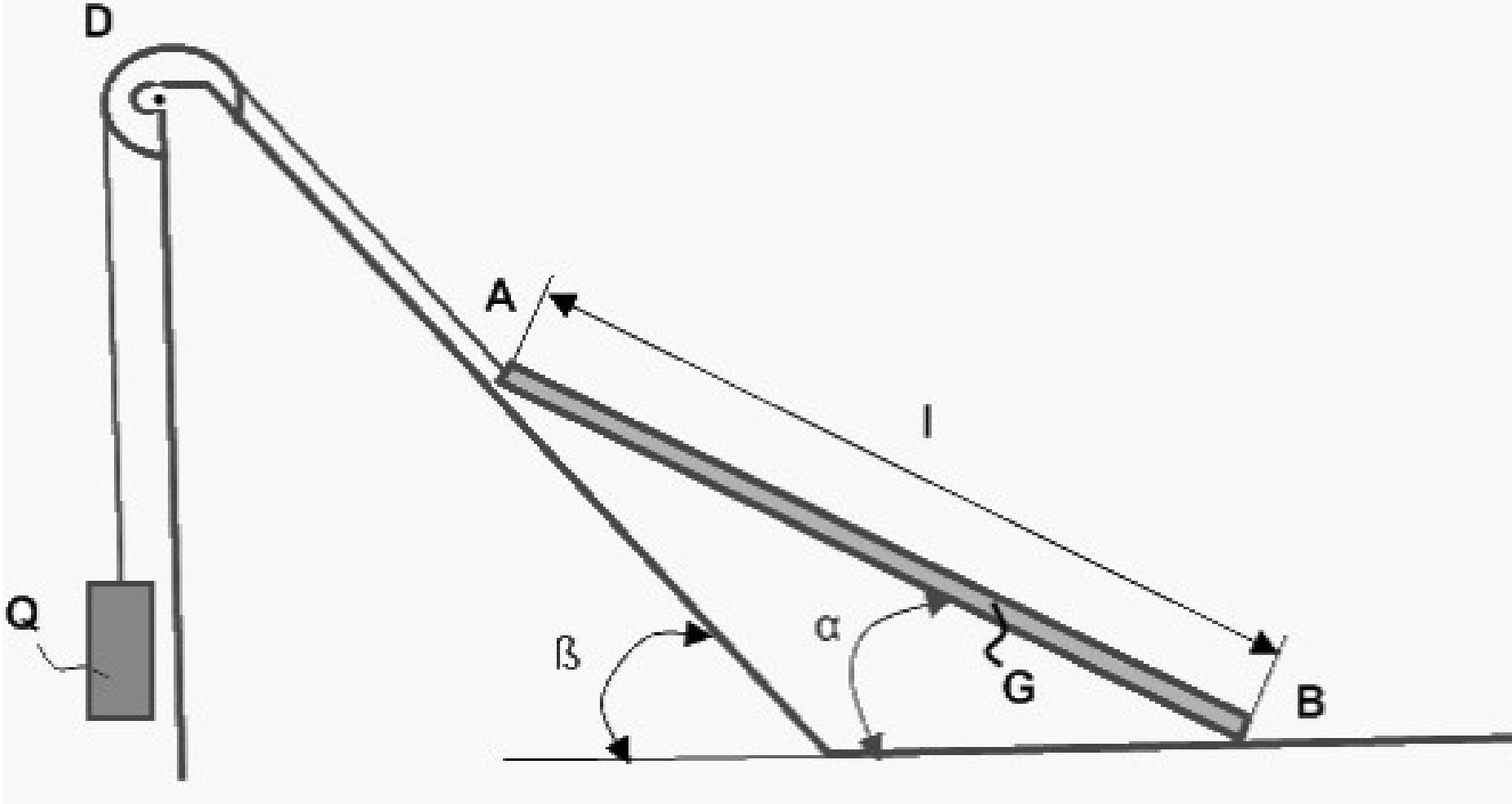


ZADATAK:

Homogeni štap težine G oslanja se na glatku horizontalnu i glatku nagnutu ravninu prema slici. Kraj štapa A pridržava se užetom prebačenim preko koloture C, a na čiji je drugi kraj obješen uteg Q.

Za zadani položaj ravnoteže odrediti silu u užetu i reakcije u osloncima A i B.

Zadano: b= 45° ; G=200 N

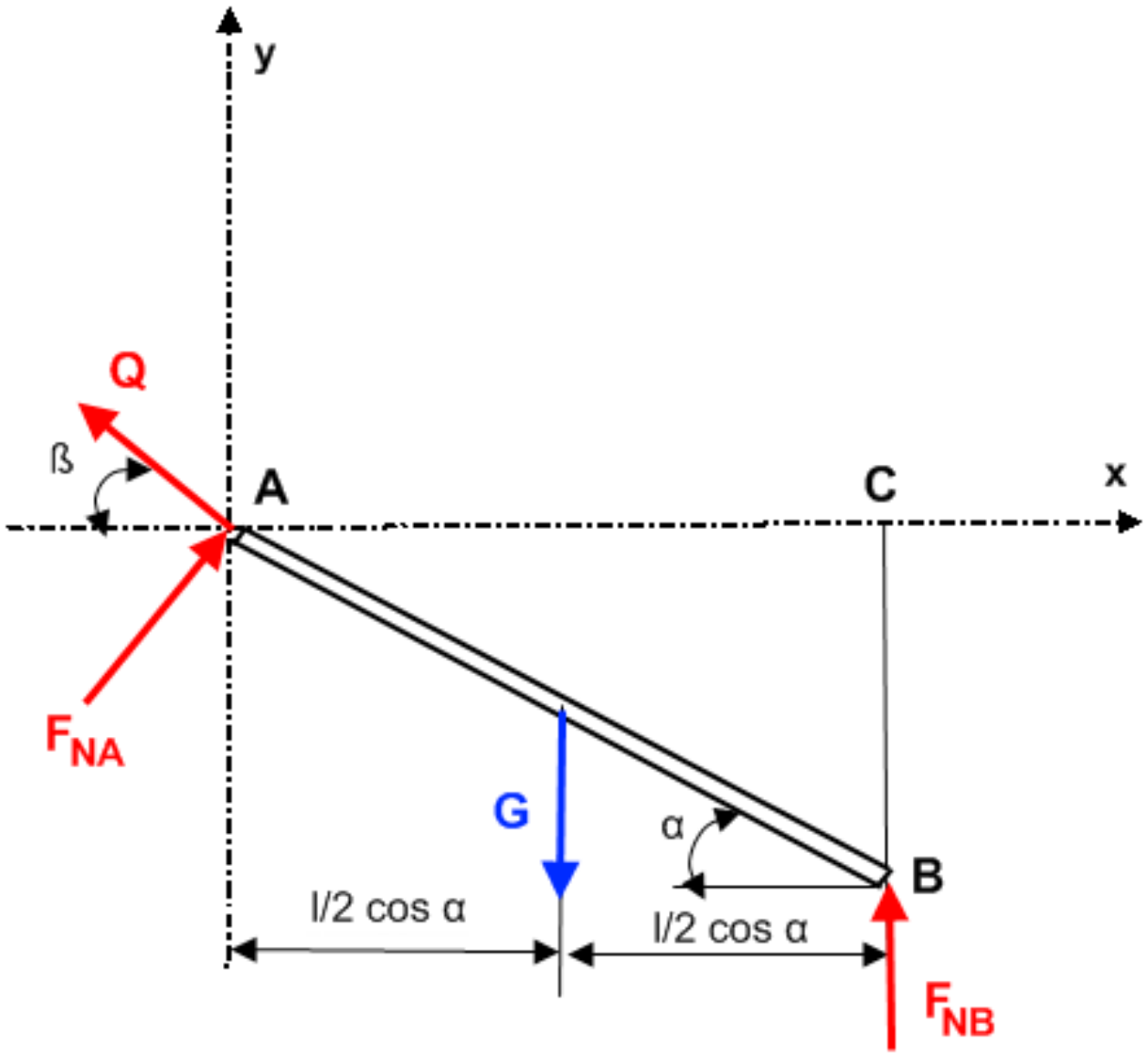


Rješenja:

F_{NB} =100 [N]

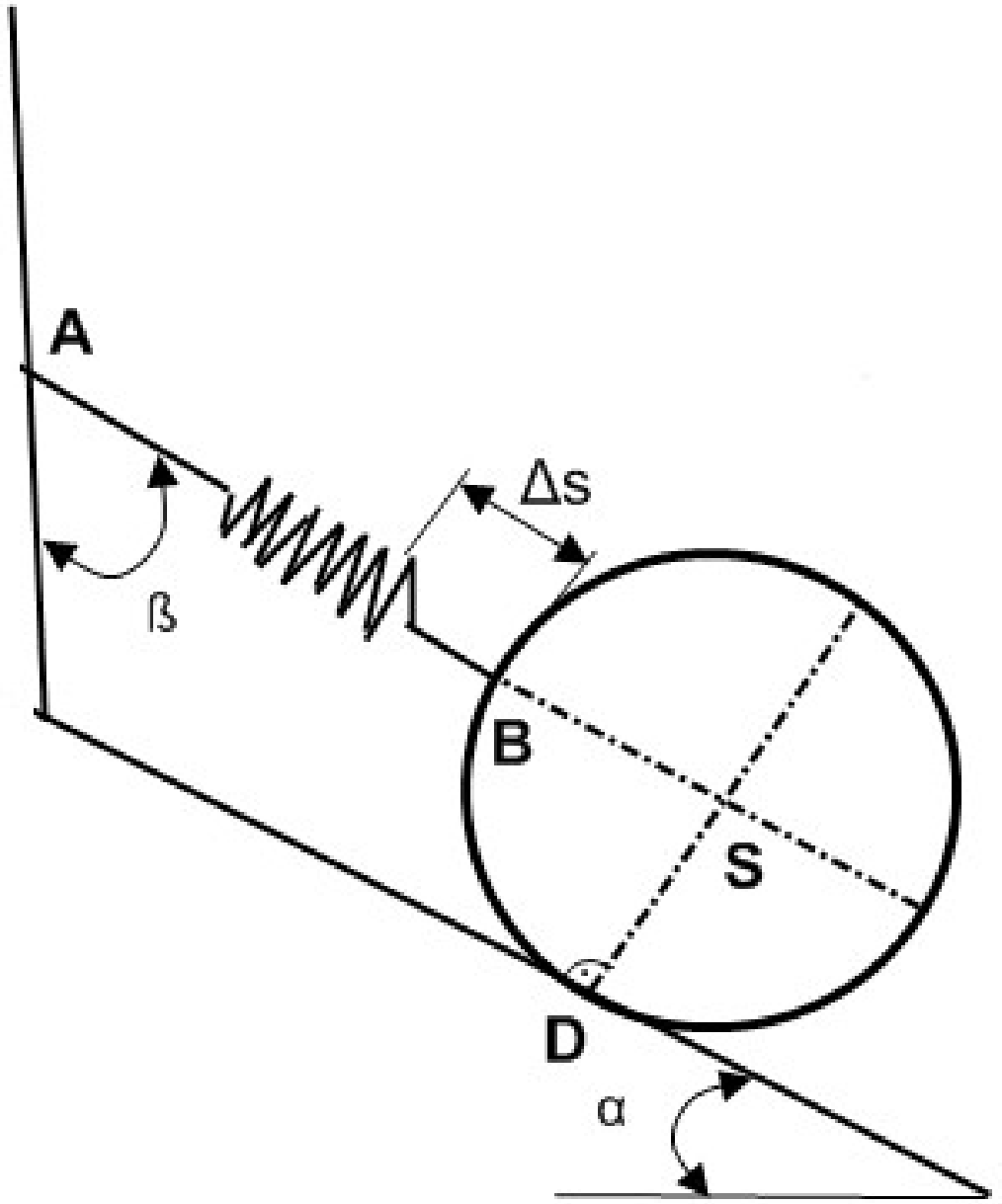
F_{NA} =70.71[N]

Q=70.71[N]



ZADATAK:

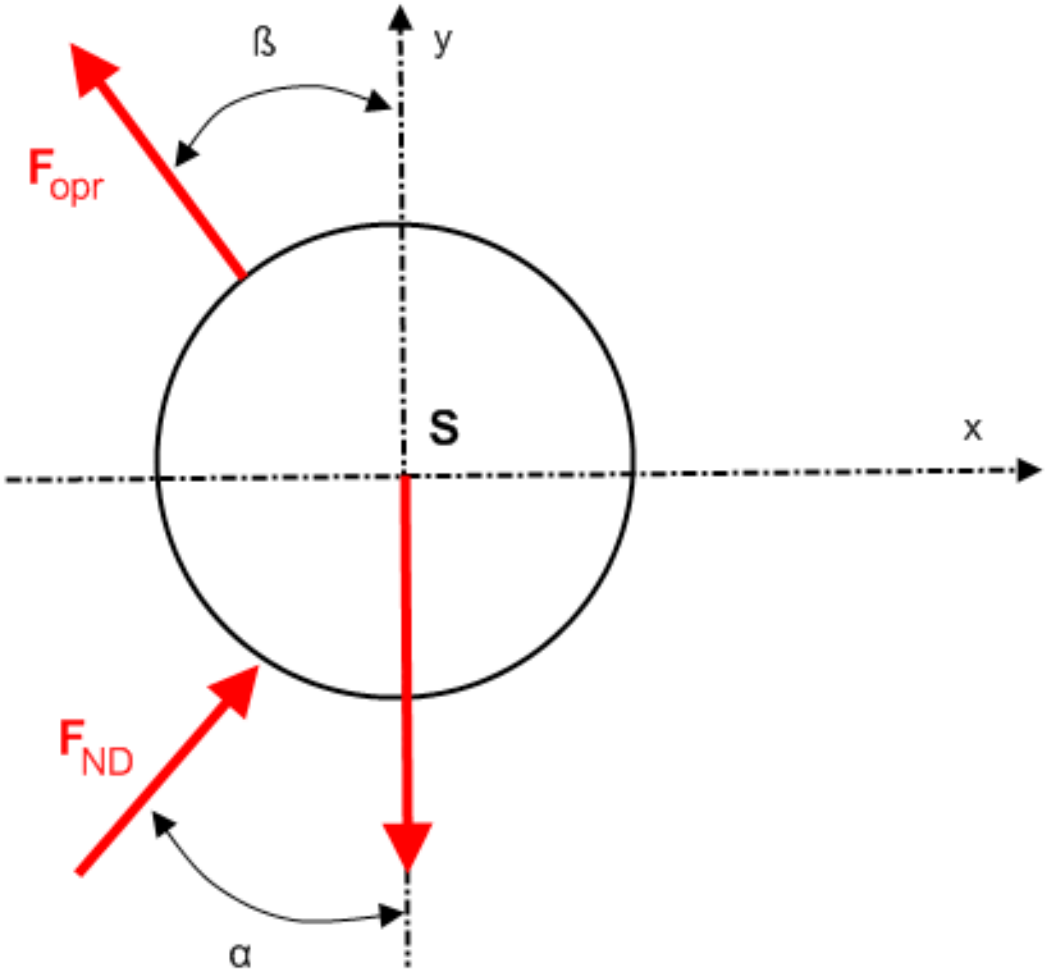
Homogena kugla, težine G=20N privezana je pomoću opruge AC, konstantne krutosti k=5 N/cm, za vertikalni zid u točki A, a u točki D oslanja se na glatku ravninu nagnutu pod kutom a=30°. Izmjerena deformacija opruge Ds iznosi 0.02m. Odrediti kut b koji pravac opruge AB zatvara s vertikalom, kao i normalnu reakciju u točki D.



Rješenja:

F_{ND} =17.32 [N]

b=60°

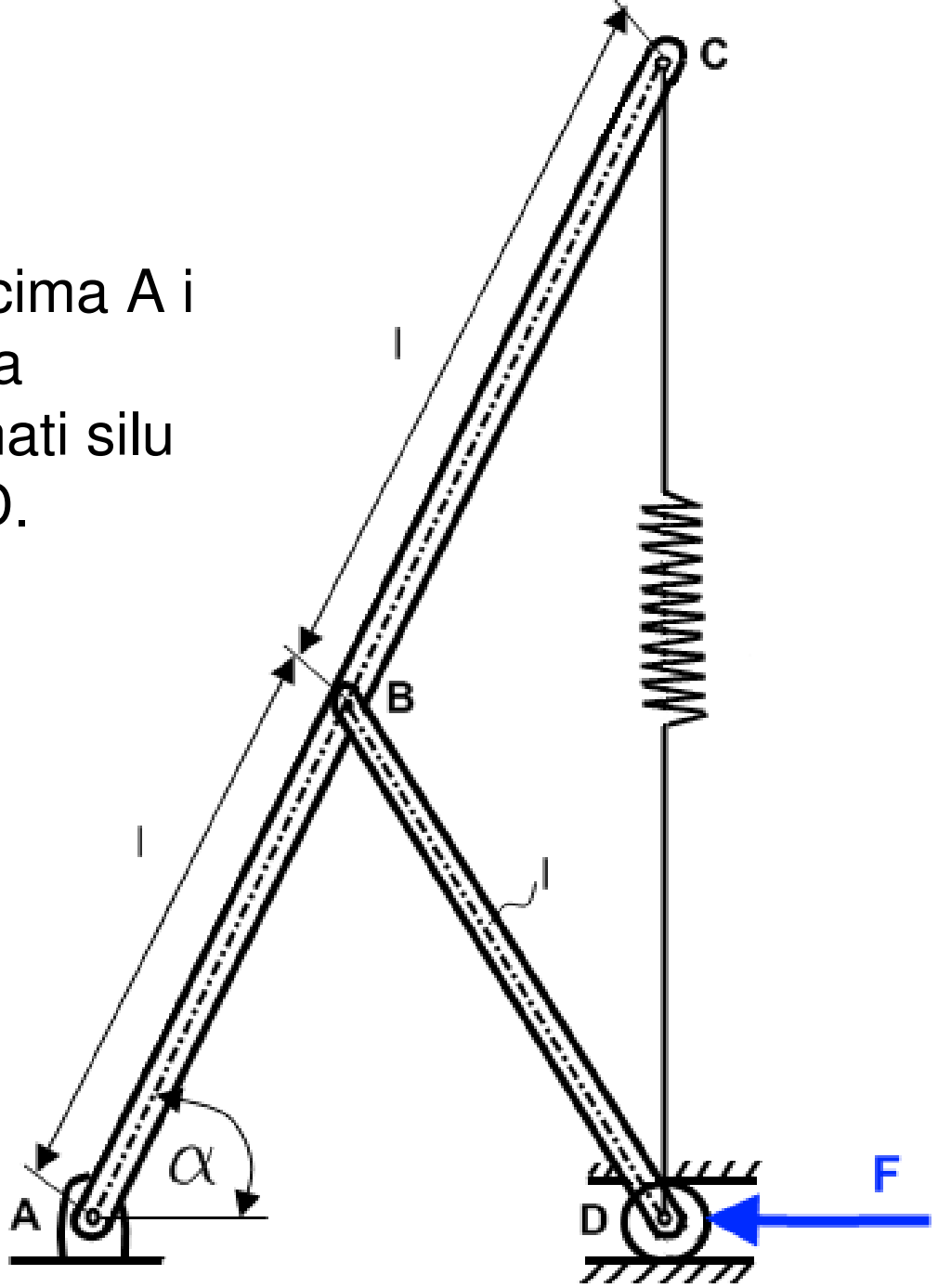


ZADATAK:

Odrediti sile u osloncima A i D primjenom principa solidifikacije. Izračunati silu u opruzi i u štapu BD.

Zadano: F=100 [N]

a=60°



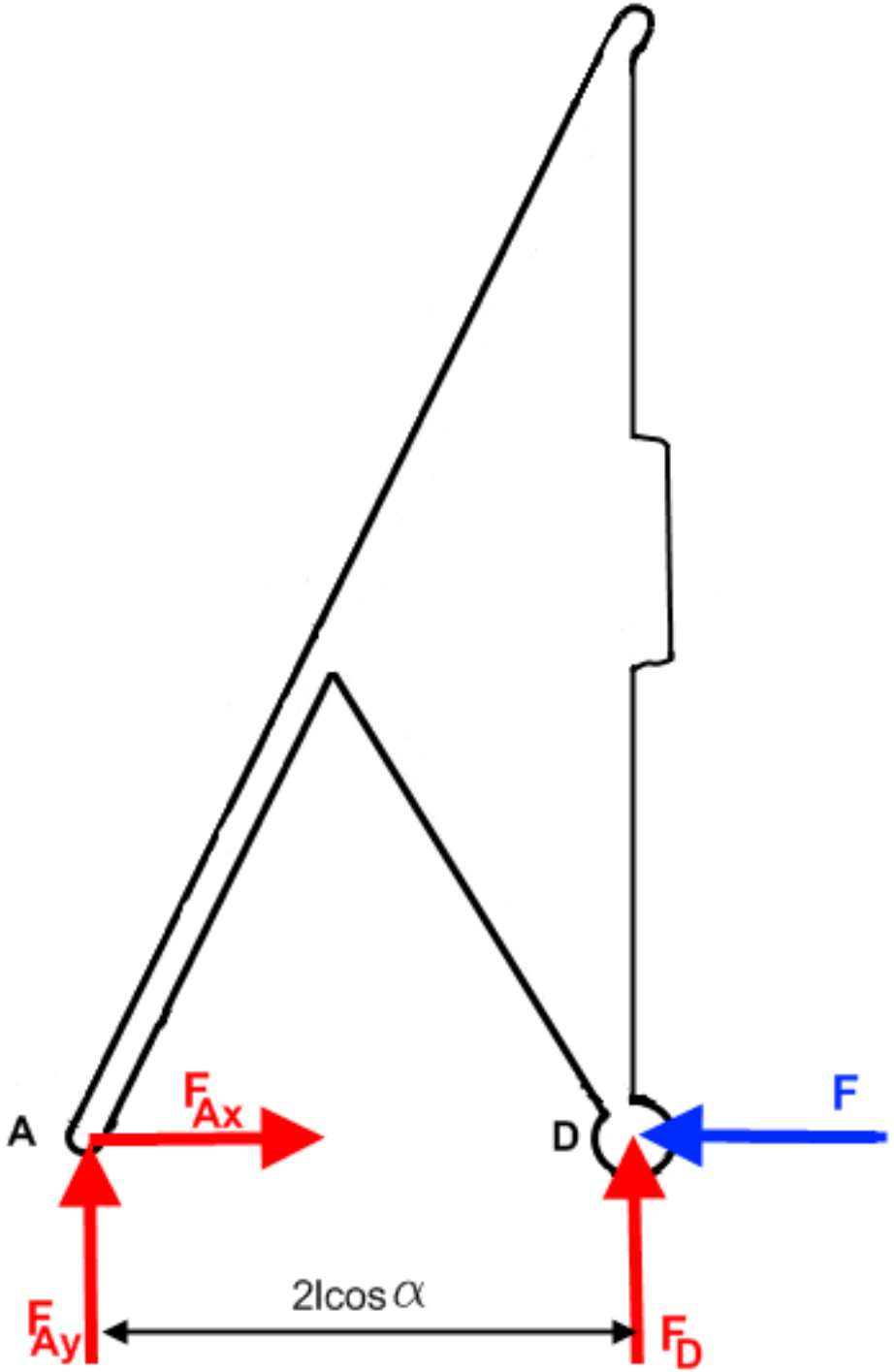
1. solidifikacija

Rješenja:

$F_D = 0$

$F_{Ay} = 0$

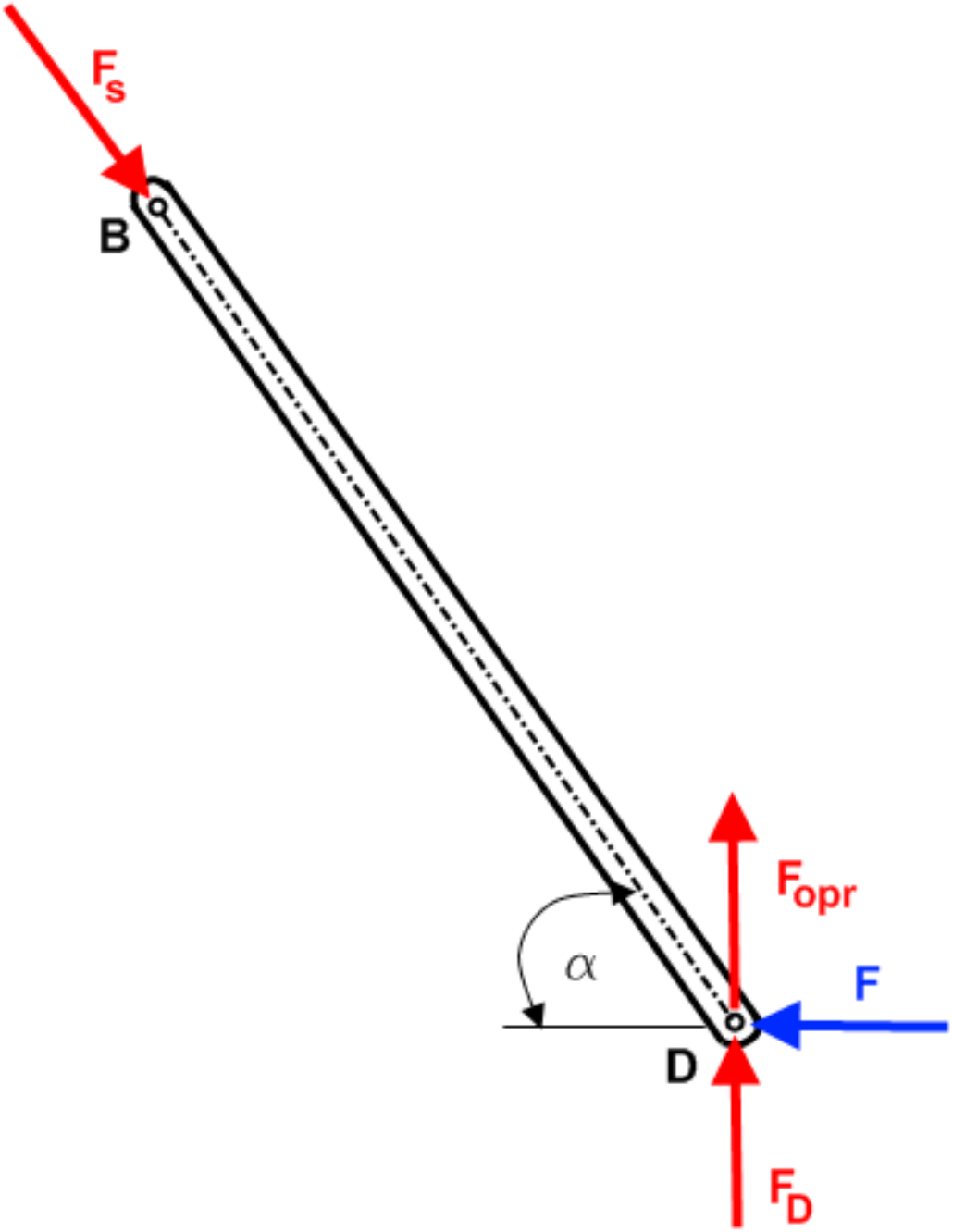
$F_{Ax} = 100$ [N]



2. Ravnoteža štapa BD

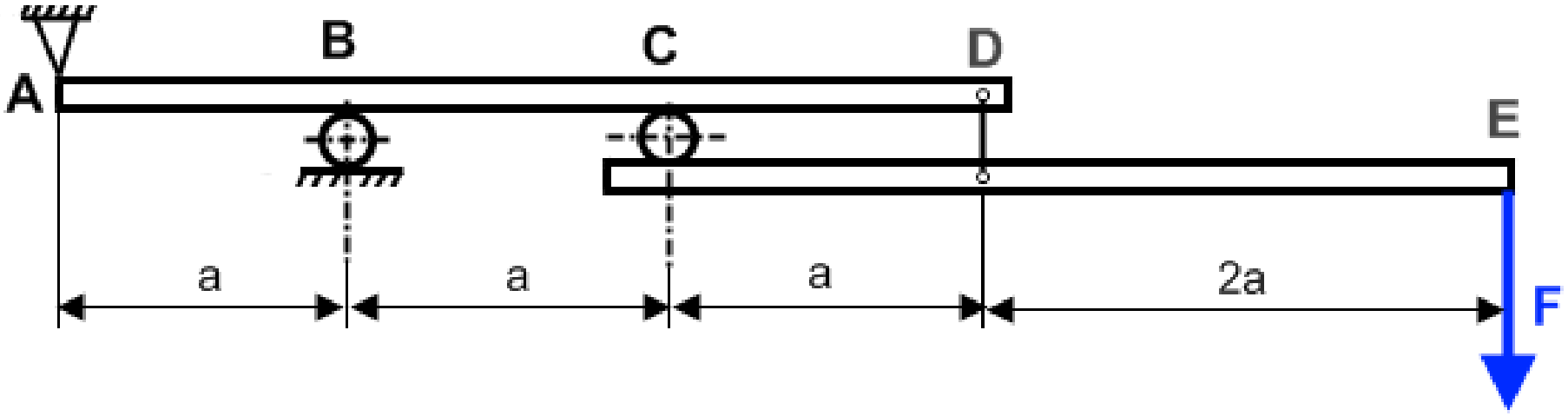
Rješenja:

F_{opr} =173.21 [N]

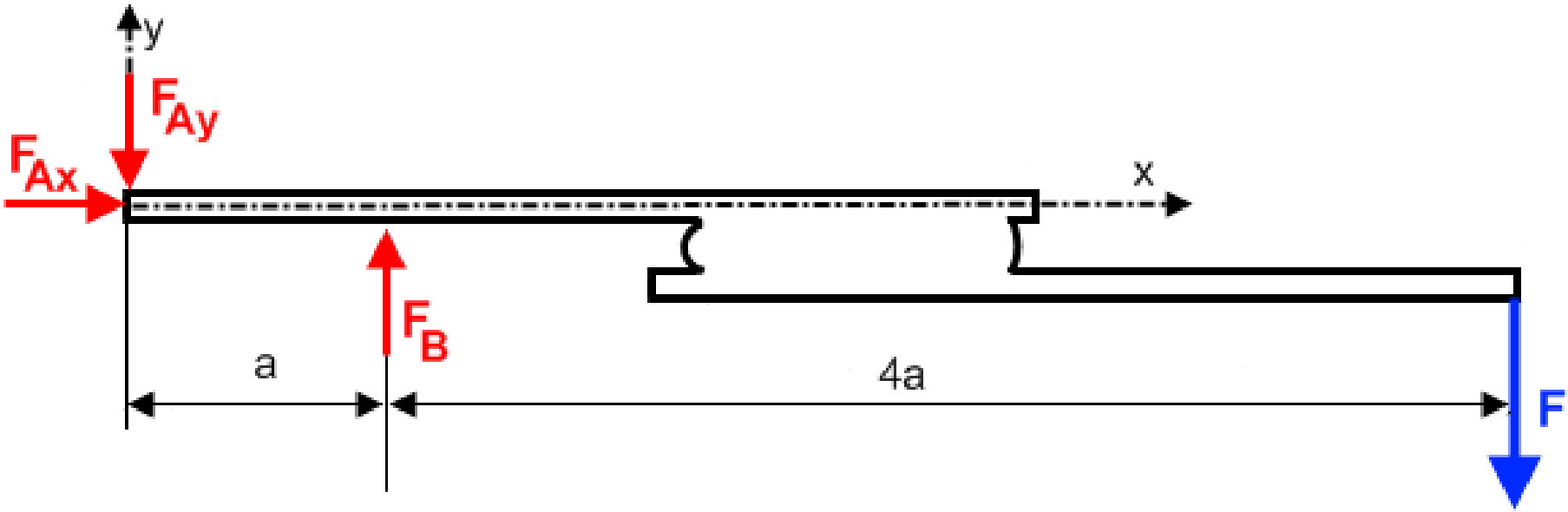


ZADATAK:

Konstrukcija prema slici sastoji se od dva štapa povezana prema slici. Odrediti sile u točkama A i B.
Zadano: F



1. način: primijenjen princip solidifikacije

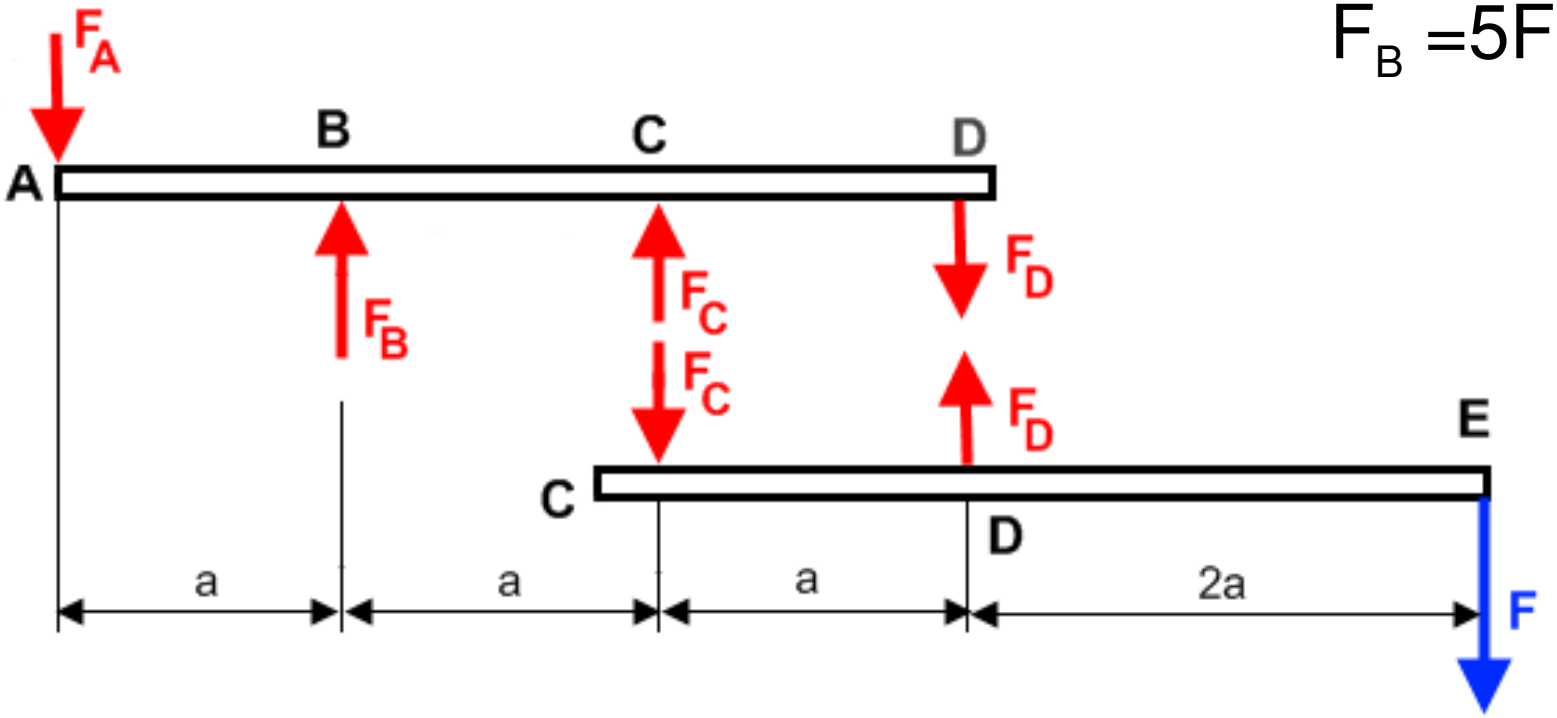


2. način: oslobađanje veza svakog od štapova zasebno

Rješenja:

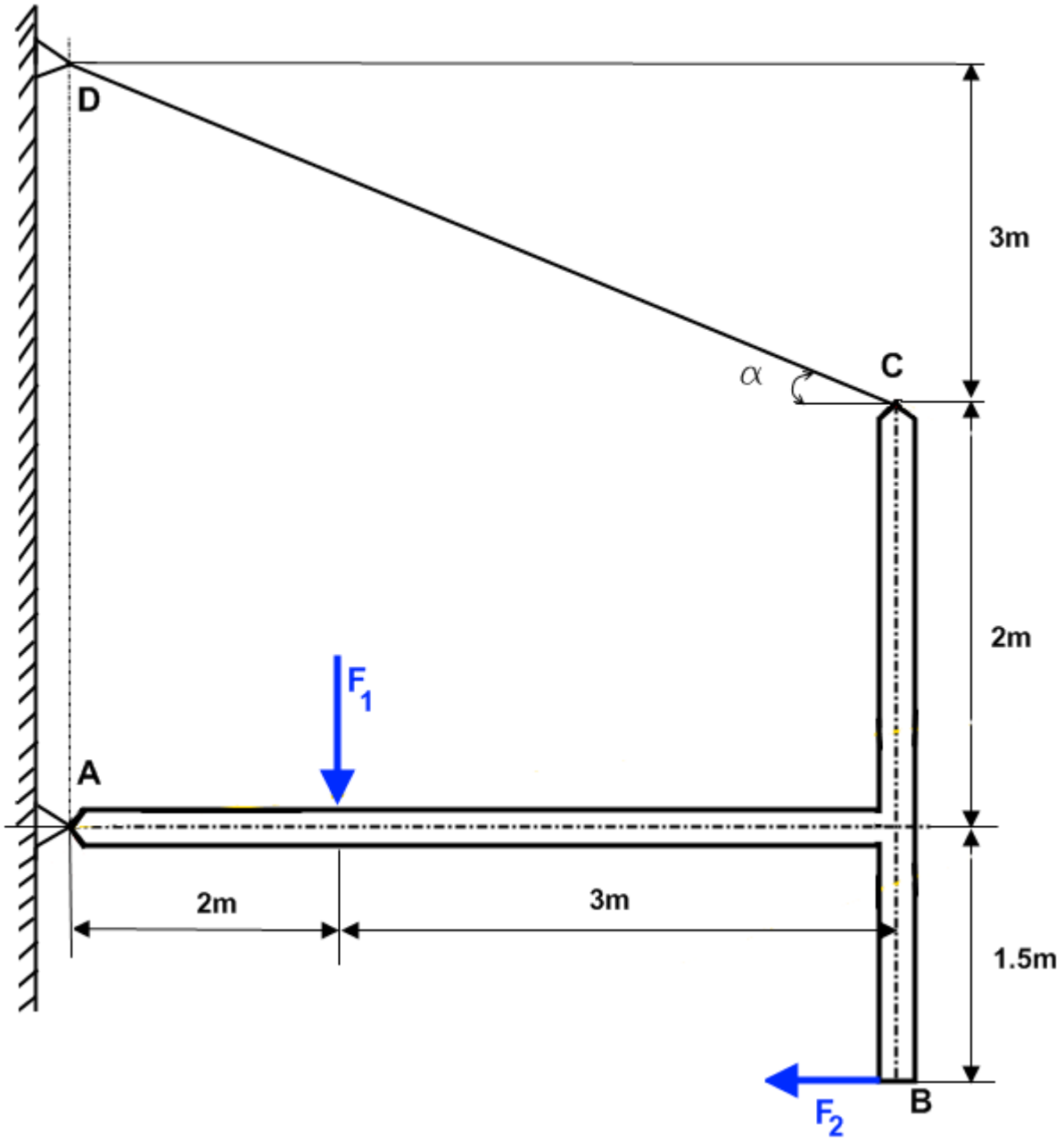
$F_{Ay} = 4F$

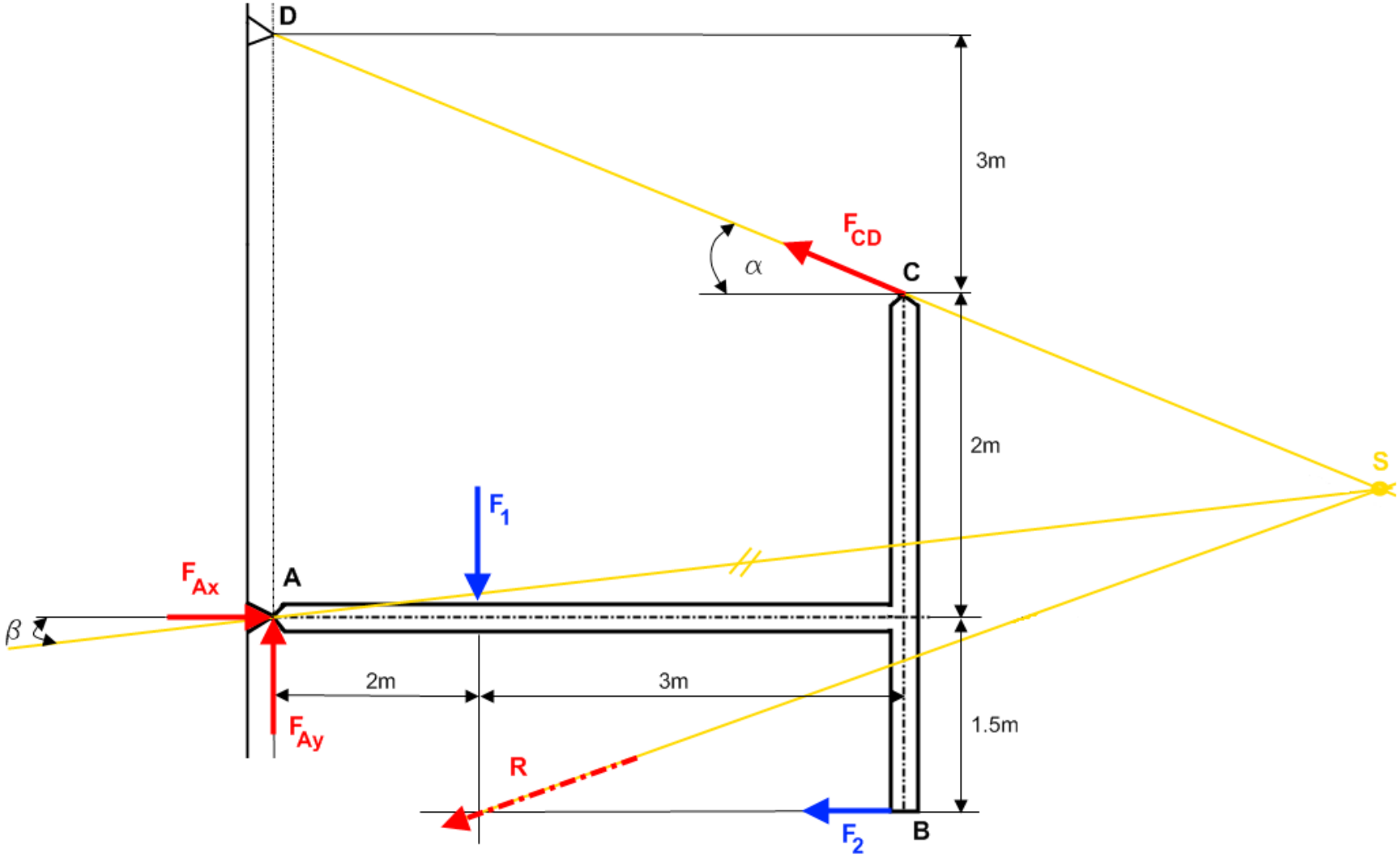
$F_B = 5F$



ZADATAK:

Na kruti okvir ABC djeluje sila F_1=100 [N] i F_2=200 [N]. Odrediti grafički reakciju u zglobu A i sile u užetu CD. Rezultate kontrolirati grafički




D
3m
F_{CD}
α
C
2m
S
F_1
F_{Ax}
A
β
2m
3m
1.5m
F_{Ay}
R
F_2
B

Rješenja:

Grafički: (očitano)

F_A =12 cm = 300 [N]

F_{Ax} =11.9 cm = 297.5 [N]

F_{Ay} =1.55 cm = 38.75 [N]

F_{CD} =4.6 cm = 115 [N]

Analitički:

F_A = 302.655 [N]

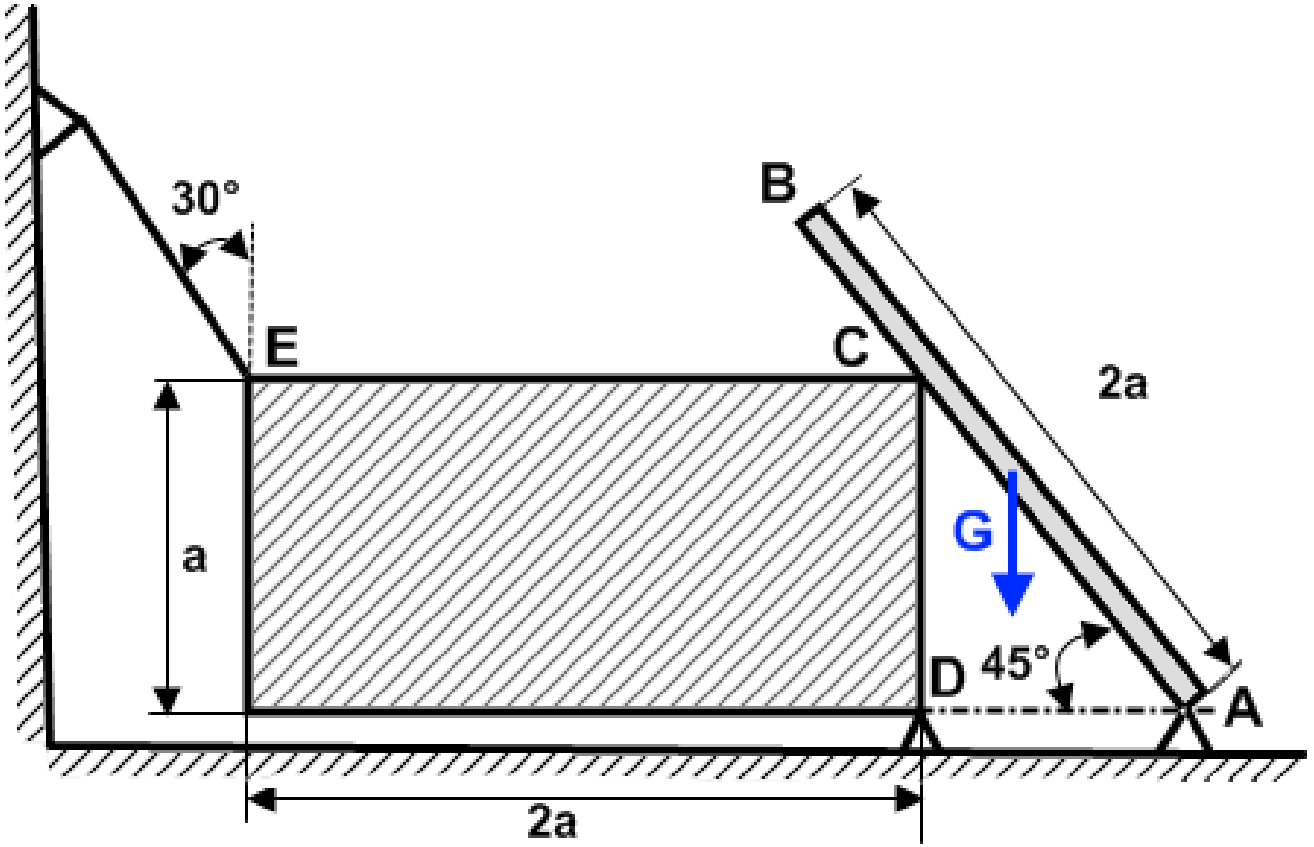
F_{Ax}= 300 [N]

F_{Ay} = 40 [N]

F_{CD} = 116.62 [N]

ZADATAK:

Za sistem prema slici potrebno je odrediti sile u točkama A, C, D i E. Težina grede AB je G=2kN, dok je težina ploče zanemariva. Zadatak riješiti grafički i analitički.



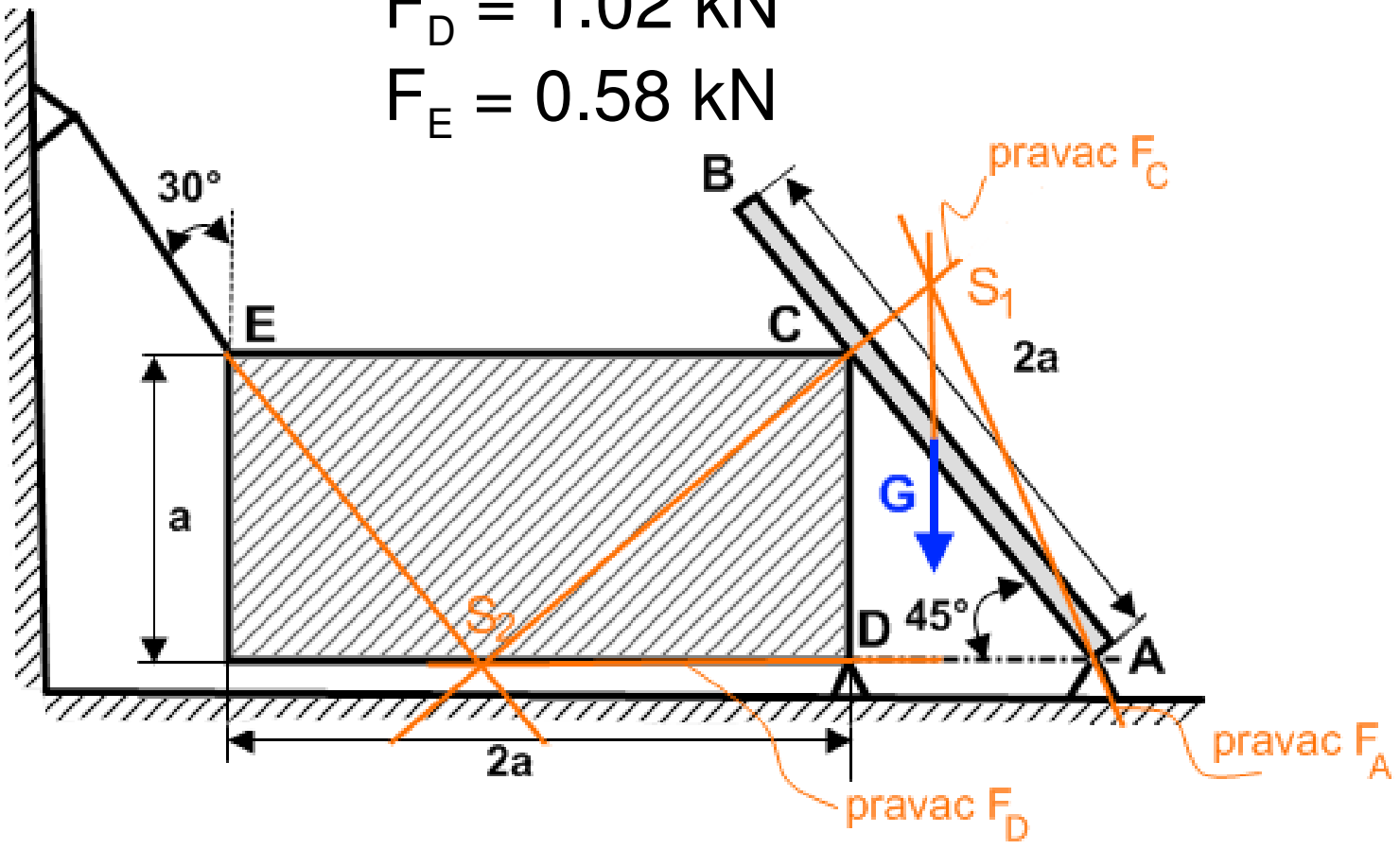
Očitano:

$F_A = 1.48$ kN

$F_C = 1$ kN

$F_D = 1.02$ kN

$F_E = 0.58$ kN



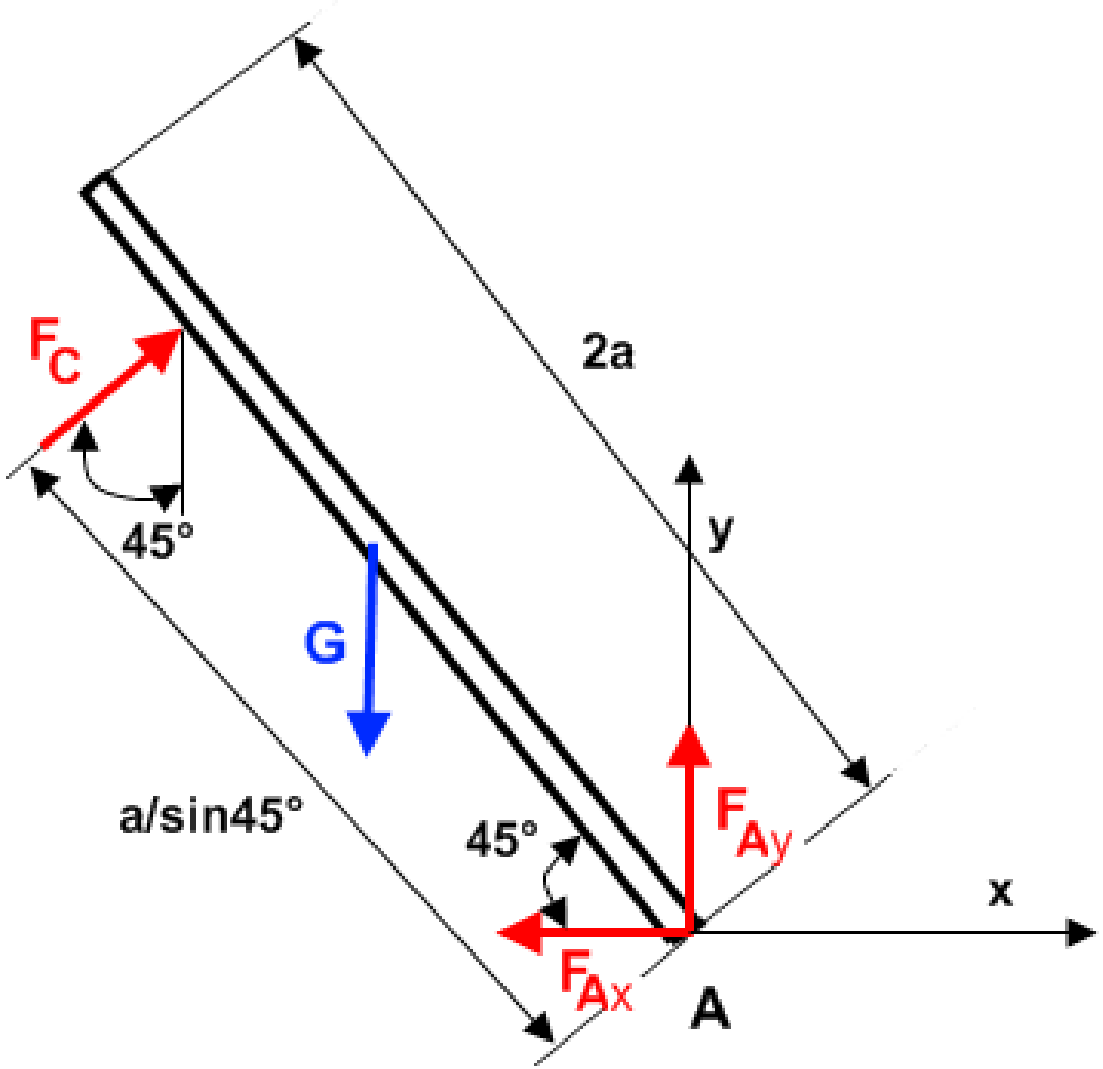
Rješenja:

F_{Ax} =0.707kN

F_{Ay} =1.26kN

F_A =1.474kN

F_C =1kN

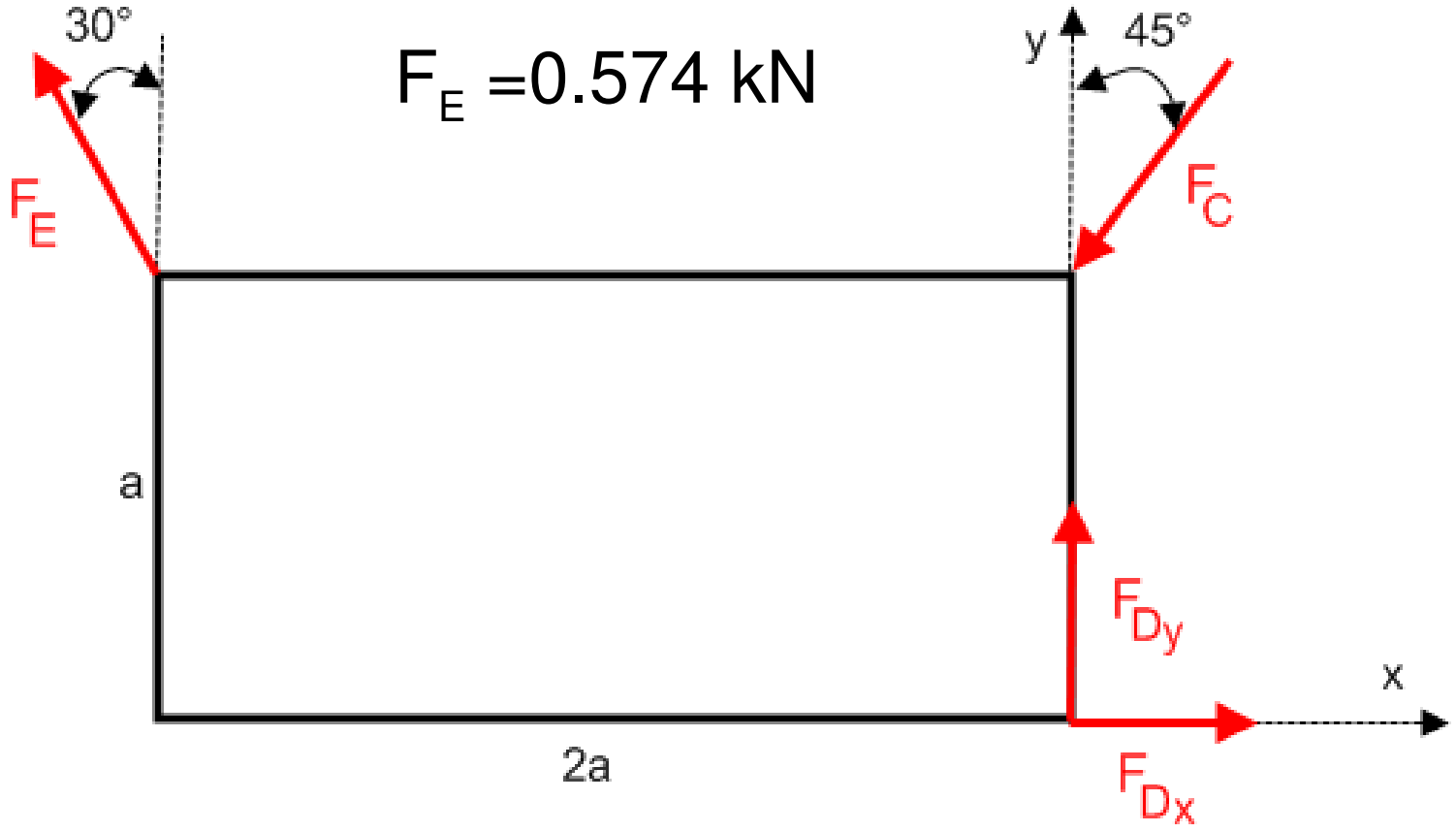


Rješenja:

F_{Dx} =0.994 kN

F_{Dy} =0.210 kN

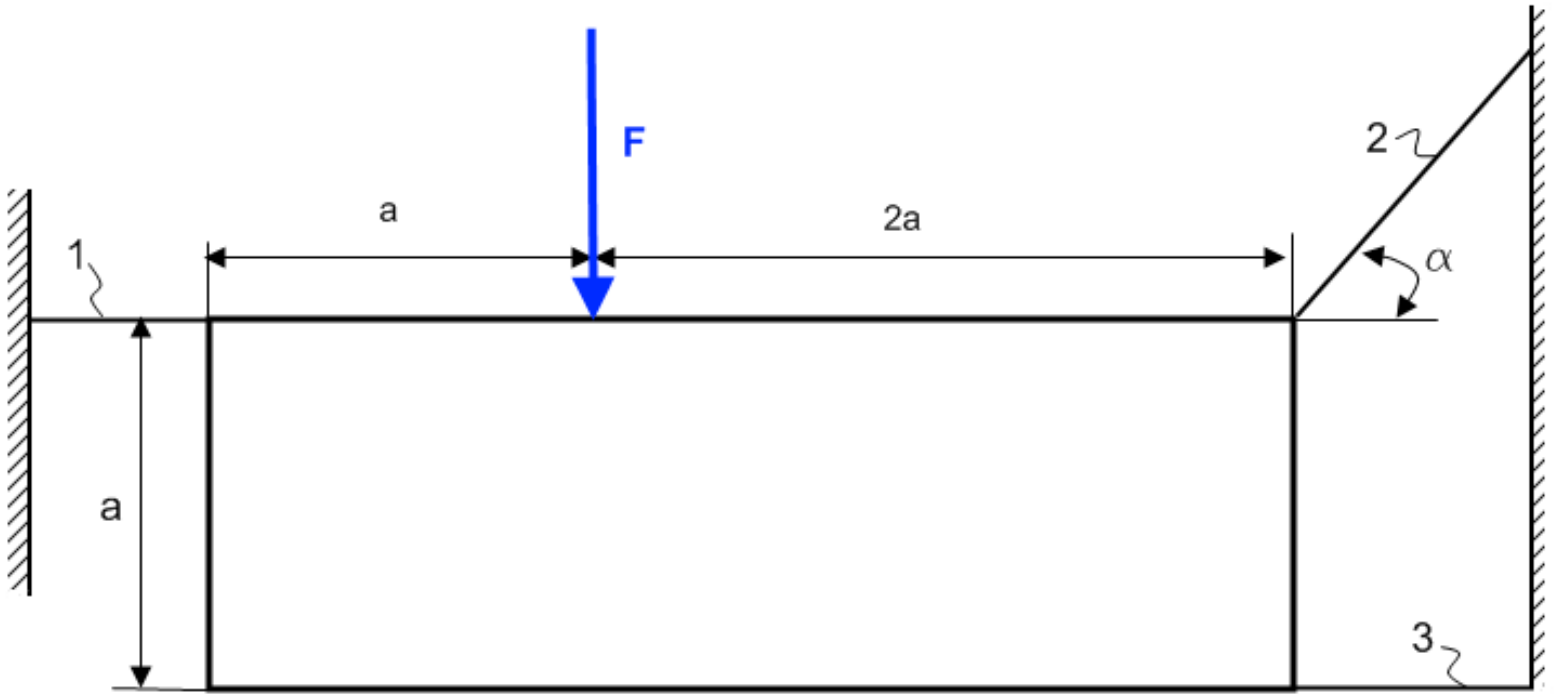
F_E =0.574 kN

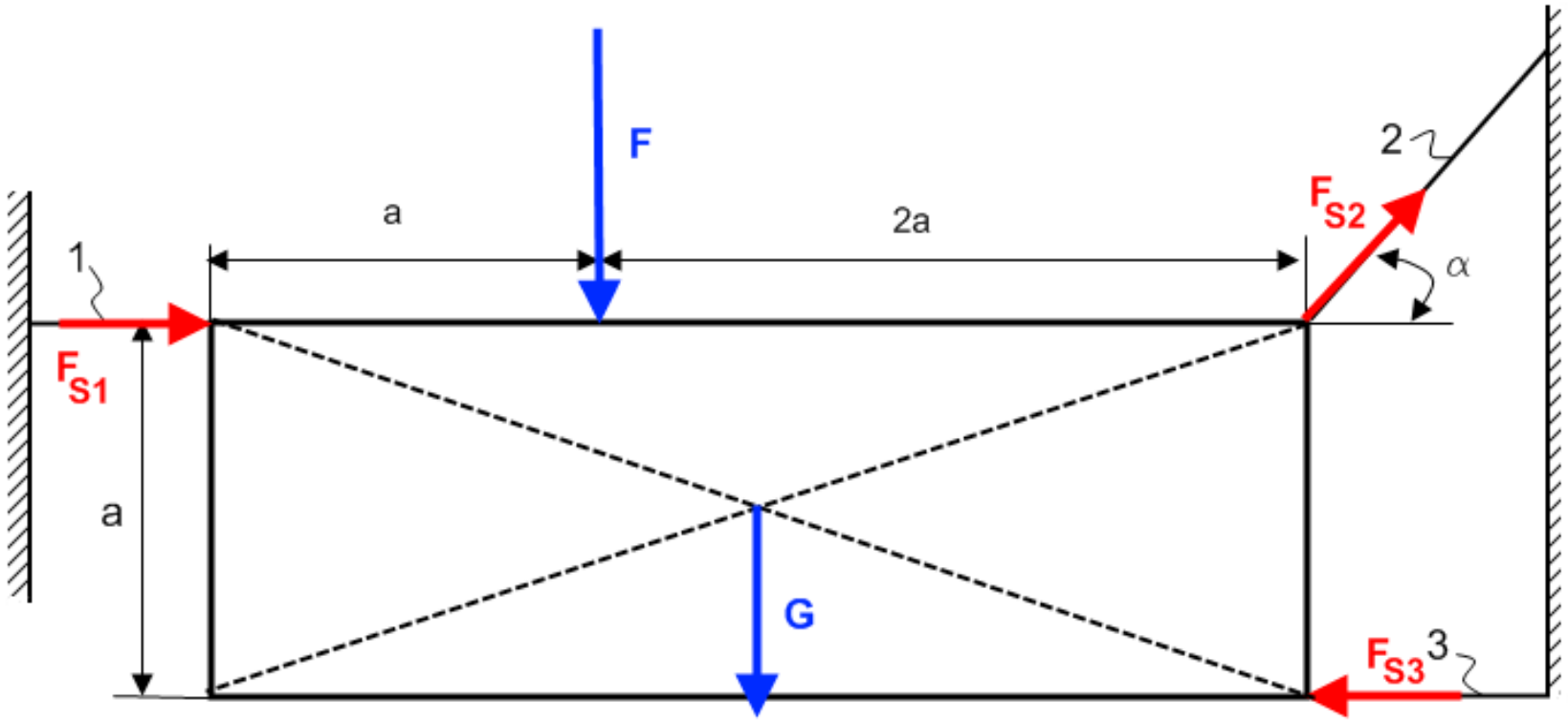


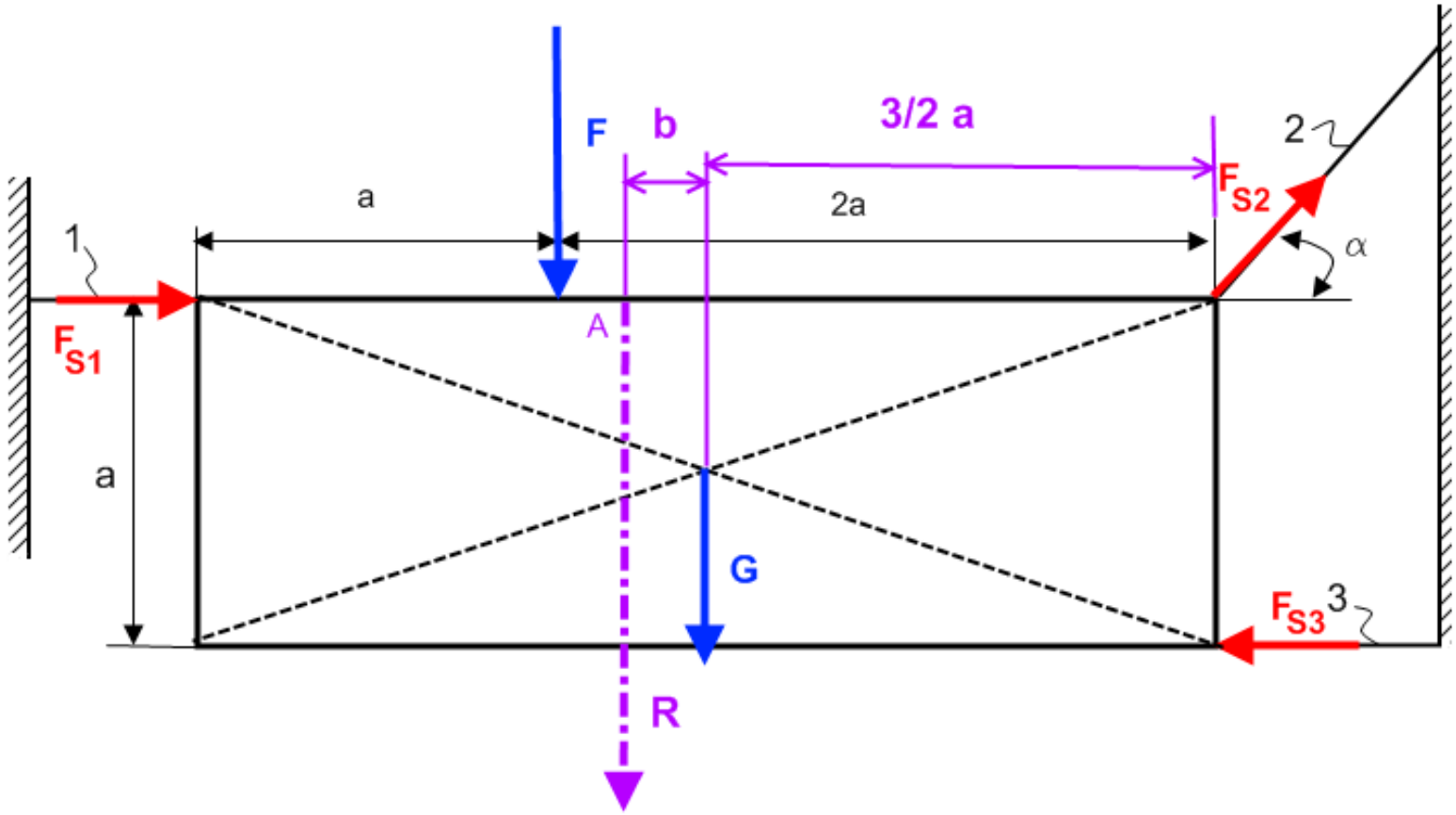
ZADATAK:

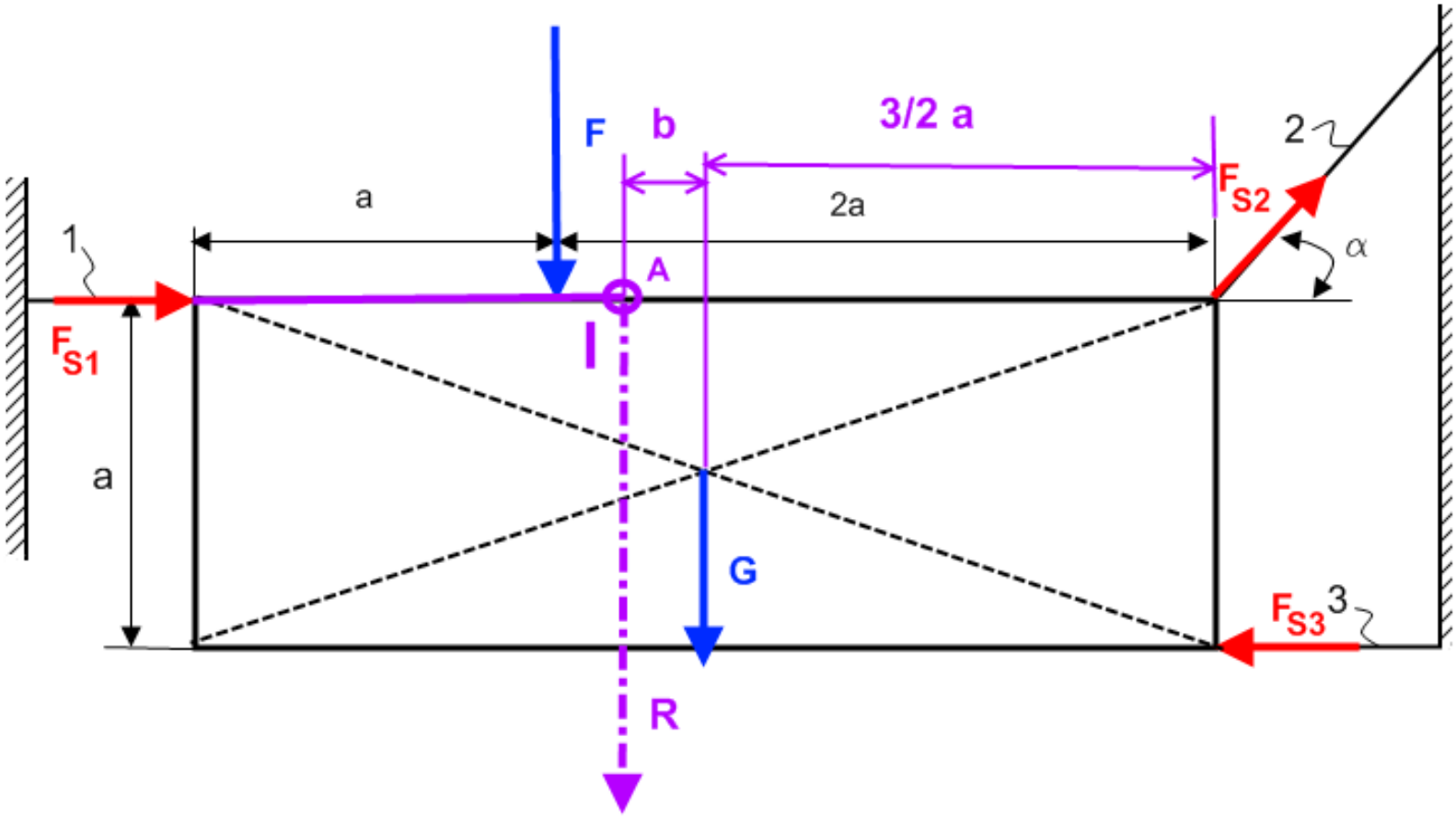
Homogena prizma težine G=200[N] i dimenzija prema slici, opterećena je silom F=100[N].

Potrebno je odrediti sile u štapovima 1, 2 i 3 Culmann-ovom metodom




F
a
2a
2
1
F_{S2}
α
F_{S1}
a
G
F_{S3}
3


F
b
3/2 a
2
a
2a
F_{S2}
1
α
F_{S1}
A
a
G
F_{S3}
3
R


F
b
3/2 a
2
a
2a
1
A
F_{S2}
α
F_{S1}
I
a
G
F_{S3}
3
R

Rješenja:

Očitano: F_{S1} = 4 cm = 200 [N]

F_{S2} = 10 cm = 500 [N]

F_{S3} = 8.5 cm = 425 [N]