

# Štirikotnik: trapez — 16. domača naloga

Matematika, Gimnazija Bežigrad

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## Povzetek

Ta dokument vsebuje domačo nalogo vključujoč snov *Štirikotnik: trapez*, ki nam jo je bil profesor naročil 13. novembra 2020, in njene rešitve, ki sem jih spisal sam. Kjer je bilo potrebno izbrati neke poljubne primere, sem jih vedno izbiral naključno.

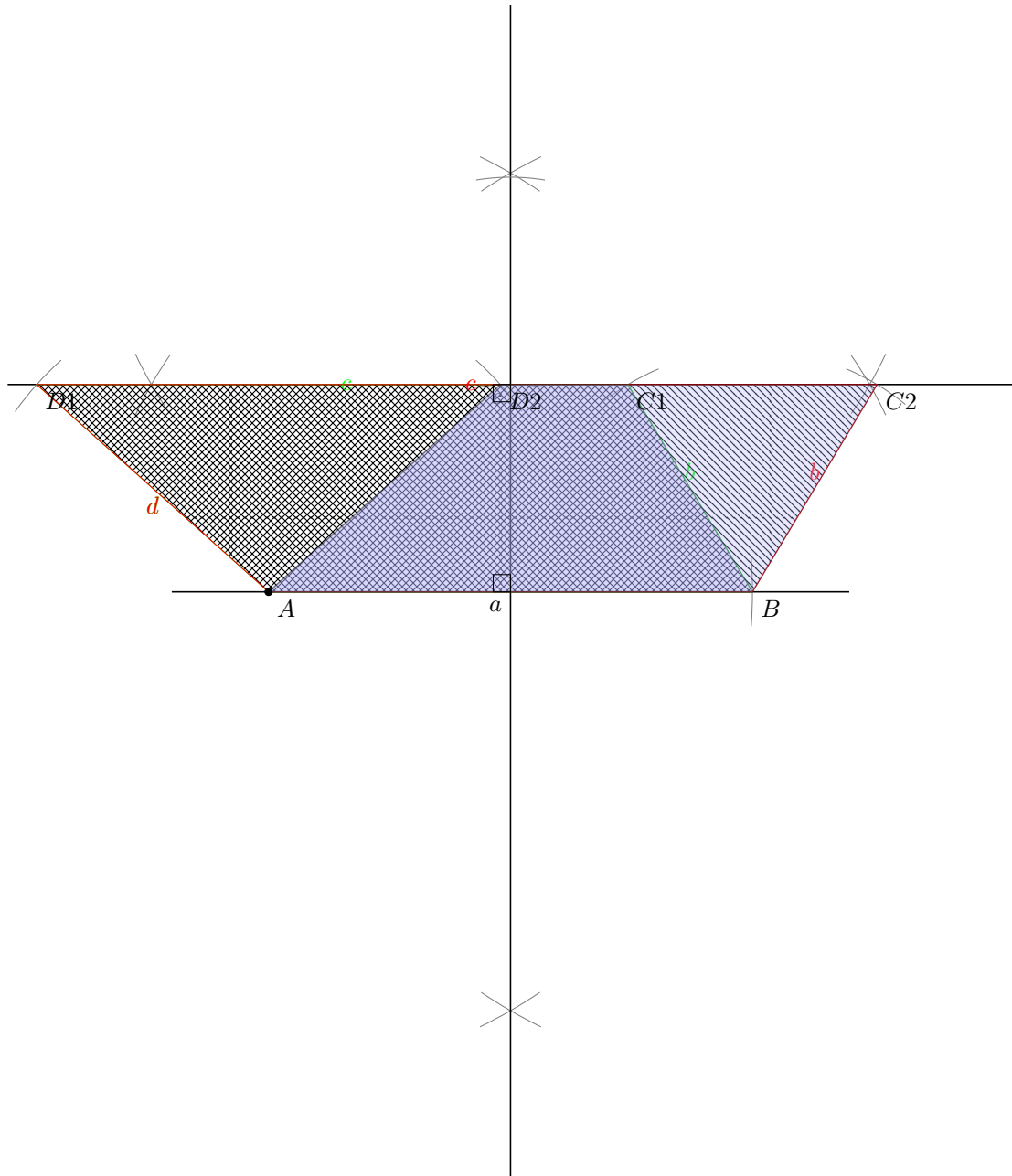
## Kazalo vsebine

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## 1 Vaje 2: stran 38, naloga 232

1. Načrtaj trapez  $ABCD$ . Napiši postopek načrtovanja.

a)  $a = 7 \text{ cm}$ ,  $v = 3 \text{ cm}$ ,  $b = 3,5 \text{ cm}$ ,  $d = 4,5 \text{ cm}$



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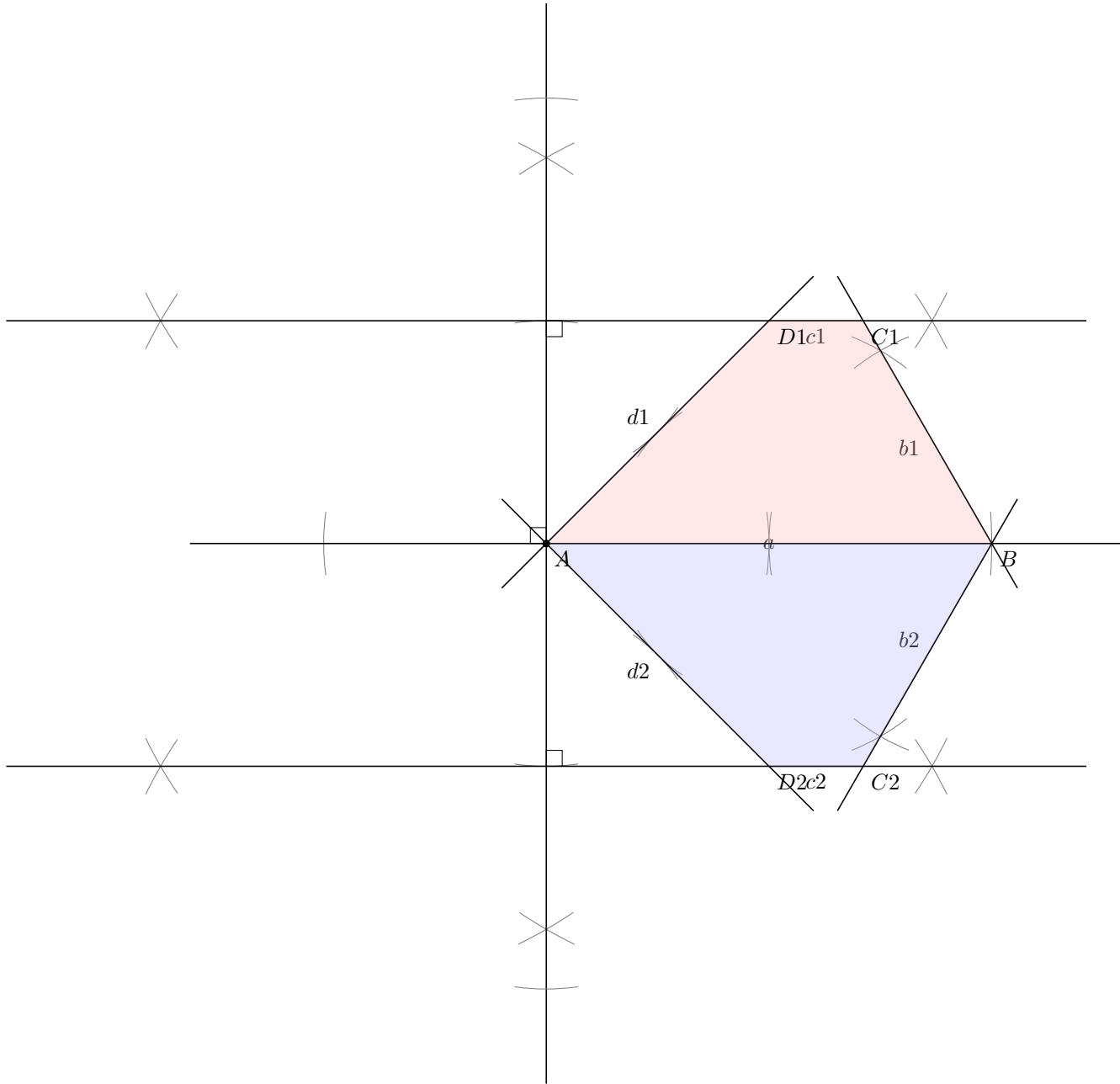
1 \begin{center}
2   \begin{tikzpicture}
3     \tkzDefPoint(0,0){A} \tkzDefPoint(7,0){B} \tkzDefPoint(7/2+3,0){vH}
4     \tkzDefPoint(4.5,0){dH} \tkzDefPoint(7-3.5,0){bH}
5     \tkzDrawLine(A,B) \tkzLabelLine[below left](A,B){$a$} \tkzCompass(A,B)
6     \tkzInterCC(A,B)(B,A) \tkzGetPoints{P1}{P2}
7     \tkzCompass(A,P1) \tkzCompass(B,P1) \tkzCompass(A,P2) \tkzCompass(B,P2)
8     \tkzInterLL(A,B)(P1,P2) \tkzGetPoint{ABM}
9     \tkzDrawLine(P1,P2)
10    \tkzInterLC(P1,P2)(ABM,vH) \tkzGetPoints{V}{VUSELESS} \tkzCompass(ABM,V)
11    \tkzInterLC(P1,P2)(V,ABM) \tkzGetPoints{VX}{ABMAGAIN} \tkzCompass(V,VX)
12    \tkzInterCC(ABM,VX)(VX,ABM) \tkzGetPoints{V1}{V2}
13    \tkzCompass(ABM,V1) \tkzCompass(VX,V1)
14    \tkzCompass(ABM,V2) \tkzCompass(VX,V2)
15    \tkzDrawLine(V1,V2) \tkzLabelLine[below left](V1,V2){$c$}
16    \tkzInterLC(V1,V2)(A,dH) \tkzGetPoints{D1}{D2}
17    \tkzCompass(A,D1) \tkzCompass(A,D2)
18    \tkzInterLC(V1,V2)(B,bH) \tkzGetPoints{C1}{C2}
19    \tkzCompass(B,C1) \tkzCompass(B,C2)
20    \draw[green, pattern=north east lines] (A) -- (B) node [midway, left]{$ $} -- (C1)
21    node [midway, right, above]{$b$} -- (D1) node [midway, right]{$c$} -- (A) node [midway,
    below]{$d$} -- cycle;
    \draw[red, pattern=north west lines] (A) -- (B) node [midway, left]{$ $} --(C2) node
    [midway, right, above]{$b$} -- (D1) node [midway, right]{$c$} -- (A) node [midway,
  
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below]{$d$} -- cycle;
22 \tkzDrawPolygon[fill=blue!30, opacity=.30](A,B,C1,D2)
23 \tkzDrawPolygon[fill=blue!30, opacity=.30](A,B,C2,D2)
24 \tkzInterLL(V,VX)(V1,V2) \tkzGetPoint{PRAVIKOT2}
25 \tkzMarkRightAngles(A,ABM,P1 ABM,PRAVIKOT2,V1)
26 \tkzDrawPoints(A) \tkzLabelPoints(A,B,D1,D2,C1,C2)
27 \end{tikzpicture}
28 \end{center}

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ĉ)  $a = 7\text{ cm}$ ,  $\alpha = 45^\circ$ ,  $\gamma = 120^\circ$ ,  $v = 3\text{ cm}$



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1 \begin{center}
2 \begin{tikzpicture}
3 \tkzDefPoint(0,0){A} \tkzDefPoint(7,0){B}
4 \tkzLabelLine[belowi left](A,B){$a$} \tkzCompass(A,B)
5 \tkzDefMidPoint(A,B) \tkzGetPoint{M} \tkzCompass(A,M) \tkzCompass(B,M)
6 \tkzInterLC(A,M)(A,M) \tkzGetPoints{X}{0} \tkzCompass(A,X)
7 \tkzDrawLine(X,B) \tkzInterCC(X,M)(M,X) \tkzGetPoints{P}{R}
8 \tkzCompass(X,P) \tkzCompass(X,R) \tkzCompass(M,P) \tkzCompass(M,R)
9 \tkzDrawLine(P,R) \tkzInterLC(P,R)(A,M) \tkzGetPoints{V}{W}
10 \tkzCompass(A,V) \tkzCompass(A,W)
11 \tkzDefMidPoint(M,V) \tkzGetPoint{6} \tkzCompass(M,6) \tkzCompass(V,6)
12 \tkzDefMidPoint(M,W) \tkzGetPoint{7} \tkzCompass(M,7) \tkzCompass(W,7)

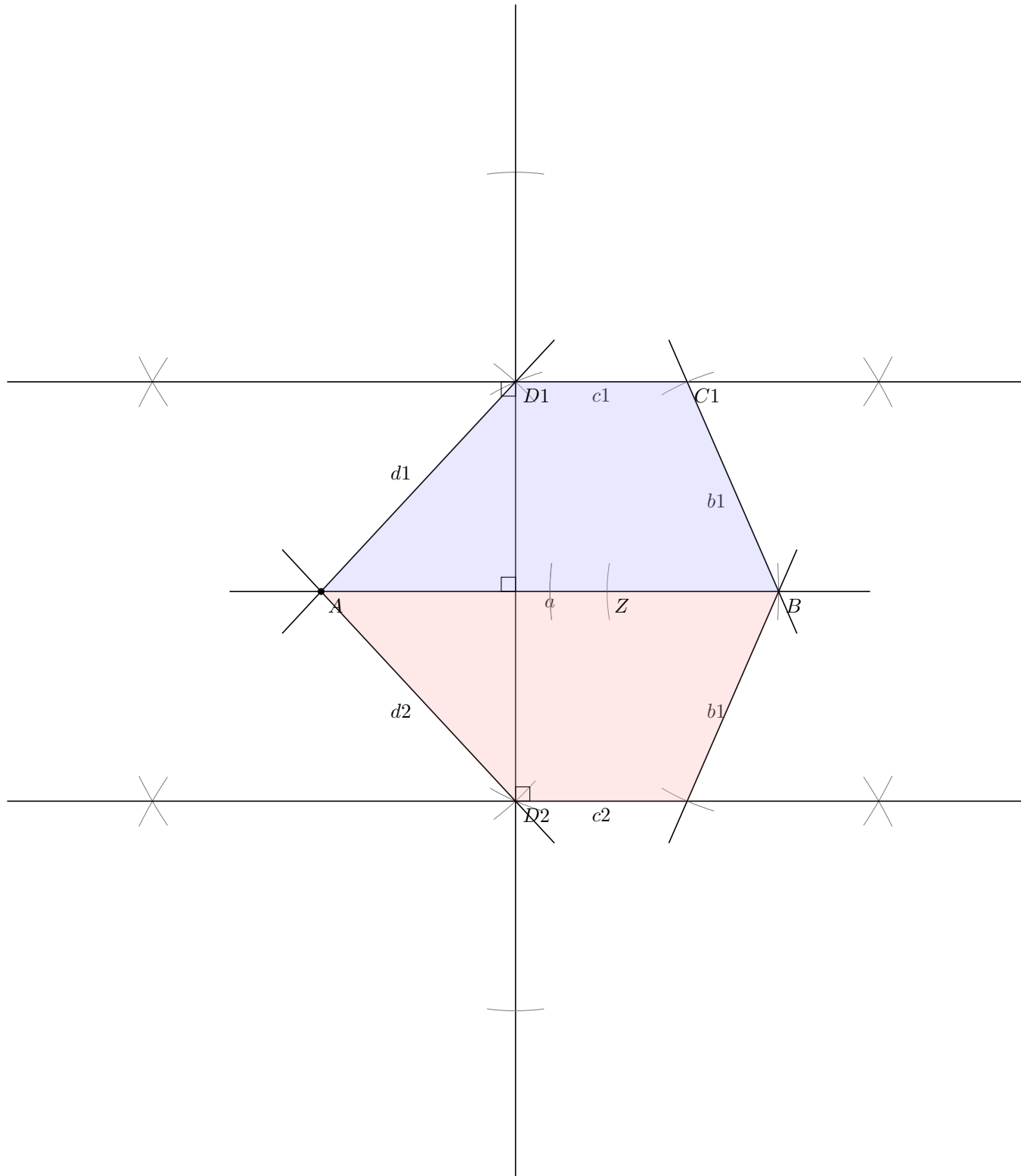
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13 \tkzInterLC(V,A)(V,A) \tkzGetPoints{T}{0} \tkzCompass(V,T)
14 \tkzInterLC(W,A)(W,A) \tkzGetPoints{U}{0} \tkzCompass(W,U)
15 \tkzInterCC(A,T)(T,A) \tkzGetPoints{1}{2}
16 \tkzCompass(A,1) \tkzCompass(A,2) \tkzCompass(T,1) \tkzCompass(T,2)
17 \tkzInterCC(A,U)(U,A) \tkzGetPoints{3}{4}
18 \tkzCompass(A,4) \tkzCompass(A,3) \tkzCompass(U,3) \tkzCompass(U,4)
19 \tkzDrawLine(1,2) \tkzDrawLine(3,4)
20 \tkzInterLL(A,6)(1,2) \tkzGetPoint{D1} \tkzDrawLine(A,D1)
21 \tkzInterLL(A,7)(3,4) \tkzGetPoint{D2} \tkzDrawLine(A,D2)
22 \tkzInterCC(B,M)(M,B) \tkzGetPoints{H}{G}
23 \tkzCompass(B,G) \tkzCompass(B,H) \tkzCompass(M,G) \tkzCompass(M,H)
24 \tkzInterLL(V,D1)(B,G) \tkzGetPoint{C1} \tkzDrawLine(B,C1)
25 \tkzInterLL(W,D2)(B,H) \tkzGetPoint{C2} \tkzDrawLine(B,C2)
26 \tkzLabelLine[below left](B,C1){$b1$}
27 \tkzLabelLine[above left](B,C2){$b2$}
28 \tkzLabelLine[below](D1,C1){$c1$} \tkzLabelLine[below](D2,C2){$c2$}
29 \tkzLabelLine[below left](A,D2){$d2$}
30 \tkzLabelLine[above left](A,D1){$d1$}
31 \tkzDrawPolygon[fill=red!30, opacity=.3](A,B,C1,D1)
32 \tkzDrawPolygon[fill=blue!30, opacity=.3](A,B,C2,D2)
33 \tkzMarkRightAngles(X,A,P A,V,D1 A,W,D2)
34 \tkzDrawPoints(A) \tkzLabelPoints(A,B,D1,D2,C1,C2)
35 \end{tikzpicture}
36 \end{center}

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d)  $a = 8$  cm,  $b = 4$  cm,  $c = 3$  cm,  $d = 5$  cm



```

1 \begin{center}
2   \begin{tikzpicture}
3     \tkzDefPoint(0,0){A} \tkzDefPoint(8,0){B} \tkzDefPoint(8-3,0){Z}
4     \tkzDefPoint(5,0){dH}\tkzDefPoint(8-3-4,0){bH}\tkzDefPoint(8-4,0){bHB}
5     \tkzDrawLine(A,B) \tkzLabelLine[below](A,B){$a$} \tkzCompass(A,B)
6     \tkzCompass(B,Z)
7     \tkzInterCC(A,dH)(Z,bH) \tkzGetPoints{D1}{D2}
8     \tkzCompass(A,D1) \tkzCompass(Z,D1) \tkzCompass(A,D2)\tkzCompass(Z,D2)
9     \tkzDrawLine(A,D1) \tkzLabelLine[above left](A,D1){$d1$}
10    \tkzDrawLine(A,D2) \tkzLabelLine[below left](A,D2){$d2$}
11    \tkzInterLL(D1,D2)(A,B) \tkzGetPoint{M}
12    \tkzInterLC(D1,D2)(D1,M) \tkzGetPoints{D1X}{MAGAIN}\tkzCompass(D1,D1X)
13    \tkzInterLC(D1,D2)(D2,M) \tkzGetPoints{MAGAIN}{D2X}

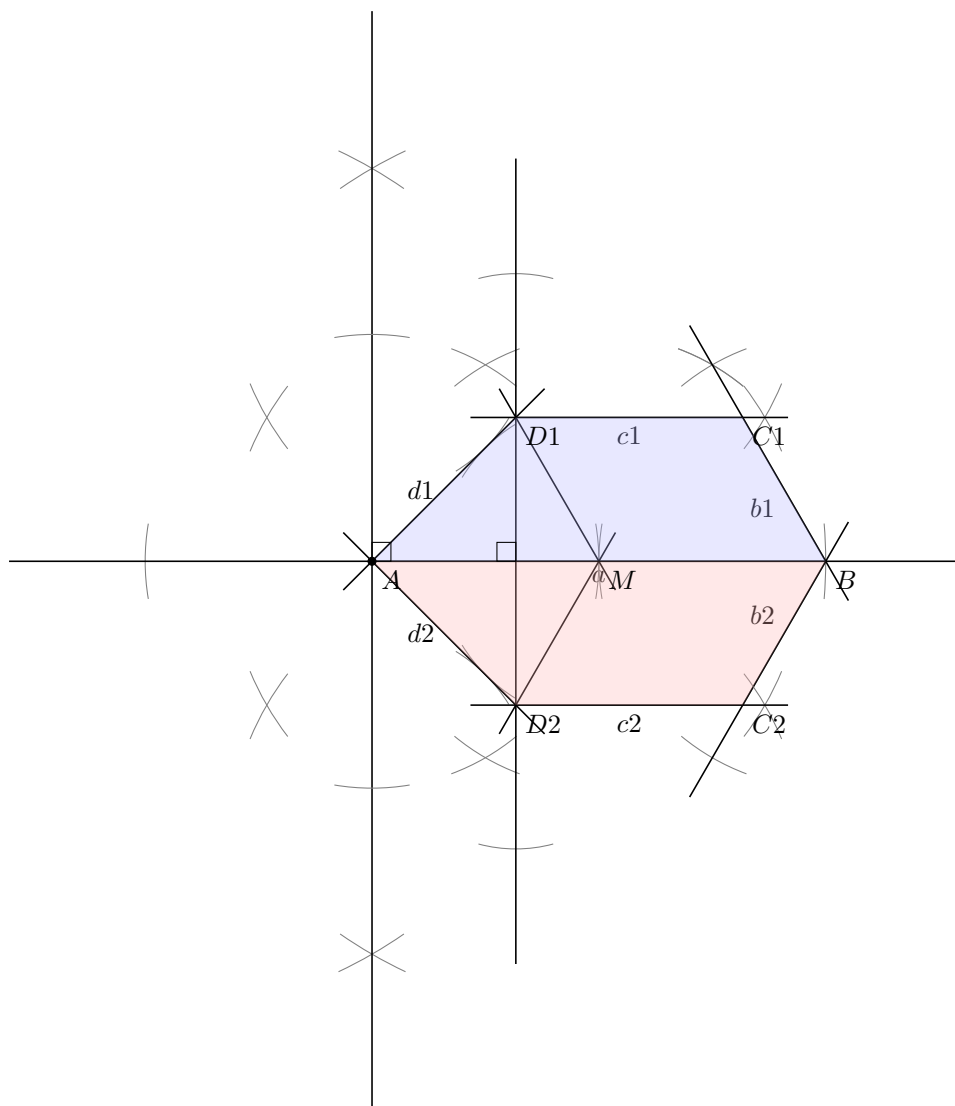
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14 \tkzDrawLine(D1X,D2X) \tkzCompass(D2,D2X)
15 \tkzInterCC(D1X,M)(M,D1X) \tkzGetPoints{V11}{V21}
16 \tkzCompass(D1X,V11) \tkzCompass(D1X,V21)
17 \tkzCompass(M,V11) \tkzCompass(M,V21) \tkzDrawLine(V11,V21)
18 \tkzInterCC(D2X,M)(M,D2X) \tkzGetPoints{V12}{V22}
19 \tkzCompass(D2X,V12) \tkzCompass(D2X,V22)
20 \tkzCompass(M,V12) \tkzCompass(M,V22) \tkzDrawLine(V12,V22)
21 \tkzCompass(B,bHB) \tkzInterLC(V11,V21)(B,bHB) \tkzGetPoints{C1}{USEL}
22 \tkzCompass(B,C1) \tkzDrawLine(B,C1)
23 \tkzLabelLine[below left](B,C1){$b1$}
24 \tkzCompass(B,bHB) \tkzInterLC(V12,V22)(B,bHB) \tkzGetPoints{USEL}{C2}
25 \tkzCompass(B,C2) \tkzDrawLine(B,C2)
26 \tkzLabelLine[below left](B,C2){$b1$}
27 \tkzLabelLine[below](D1,C1){$c1$}
28 \tkzLabelLine[below](D2,C2){$c2$}
29 \tkzDrawPolygon[fill=blue!30, opacity=.30](A,B,C1,D1)
30 \tkzDrawPolygon[fill=red!30, opacity=.30](A,B,C2,D2)
31 \tkzMarkRightAngles(A,M,D1 M,D1,V21 M,D2,C2)
32 \tkzDrawPoints(A) \tkzLabelPoints(A,B,Z,D1,D2,C1)
33 \end{tikzpicture}
34 \end{center}

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e)  $a = 6 \text{ cm}, \alpha = 45^\circ, \beta = 60^\circ, c = 3 \text{ cm}$



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1 \begin{center}
2 \begin{tikzpicture}
3 \tkzDefPoint(0,0){A} \tkzDefPoint(6,0){B}
4 \tkzLabelLine[below](A,B){$a$} \tkzCompass(A,B)
5 \tkzDefMidPoint(A,B) \tkzGetPoint{M} \tkzCompass(A,M) \tkzCompass(B,M)
6 \tkzInterLC(A,M)(A,M) \tkzGetPoints{MX}{MAGAIN} \tkzCompass(A,MX)
7 \tkzDrawLine(MX,B) \tkzInterCC(MX,M)(M,MX) \tkzGetPoints{P1}{P2}

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8 \tkzCompass(MX,P1) \tkzCompass(M,P1)
9 \tkzCompass(MX,P2) \tkzCompass(M,P2)
10 \tkzDrawLine(P1,P2) \tkzInterLC(P1,P2)(A,M) \tkzGetPoints{M1}{M2}
11 \tkzCompass(A,M1) \tkzCompass(A,M2)
12 \tkzDefMidPoint(M1,M) \tkzGetPoint{A1}
13 \tkzCompass(M,A1) \tkzCompass(M1,A1)
14 \tkzDefMidPoint(M2,M) \tkzGetPoint{A2}
15 \tkzCompass(M,A2) \tkzCompass(M2,A2)
16 \tkzInterCC(M,A)(A,M) \tkzGetPoints{M2}{M1}
17 \tkzCompass(M,M1) \tkzCompass(M,M2) \tkzCompass(A,M1)\tkzCompass(A,M2)
18 \tkzInterLL(A,A1)(M,M1) \tkzGetPoint{D1}
19 \tkzInterLL(A,A2)(M,M2) \tkzGetPoint{D2}
20 \tkzDrawLine(M,D1) \tkzDrawLine(M,D2) \tkzLabelLine[left](A,D1){$d1$}
21 \tkzDrawLine(A,D1) \tkzDrawLine(A,D2) \tkzLabelLine[left](A,D2){$d2$}
22 \tkzInterCC(M,B)(B,M) \tkzGetPoints{B1}{B2}
23 \tkzCompass(M,B1) \tkzCompass(M,B1) \tkzCompass(B,B1)\tkzCompass(B,B2)
24 \tkzDrawLine(B,B1) \tkzDrawLine(B,B2)
25 \tkzInterLL(D1,D2)(A,B) \tkzGetPoint{DM}
26 \tkzInterLC(D1,D2)(D1,DM) \tkzGetPoints{M1X}{USEL} \tkzCompass(D1,M1X)
27 \tkzInterLC(D1,D2)(D2,DM) \tkzGetPoints{USEL}{M2X} \tkzCompass(D2,M2X)
28 \tkzDrawLine(M1X,M2X)
29 \tkzInterCC(DM,M1X)(M1X,DM) \tkzGetPoints{V1}{V2}
30 \tkzCompass(DM,V1) \tkzCompass(M1X,V1)
31 \tkzCompass(DM,V2) \tkzCompass(M1X,V2)
32 \tkzInterCC(DM,M2X)(M2X,DM) \tkzGetPoints{W1}{W2}
33 \tkzCompass(DM,W1) \tkzCompass(M2X,W1)
34 \tkzCompass(DM,W2) \tkzCompass(M2X,W2)
35 \tkzInterLL(B,B1)(V1,V2) \tkzGetPoint{C1}
36 \tkzInterLL(B,B2)(W1,W2) \tkzGetPoint{C2}
37 \tkzDrawLine(D1,C1) \tkzLabelLine[below](D1,C1){$c1$}
38 \tkzDrawLine(D2,C2) \tkzLabelLine[below](D2,C2){$c2$}
39 \tkzLabelLine[below left](B,C1){$b1$}
40 \tkzLabelLine[above left](B,C2){$b2$}
41 \tkzDrawPolygon[fill=blue!30, opacity=0000.3000](A,B,C1,D1)
42 \tkzDrawPolygon[fill=red!30, opacity=0000.3000](A,B,C2,D2)
43 \tkzMarkRightAngles(M,A,P1 A,DM,D1)
44 \tkzDrawPoints(A) \tkzLabelPoints(A,B,M,D1,D2,C1,C2)
45 \end{tikzpicture}
46 \end{center}

```

## 2 Anketa

Pri anketi nisem povsem opredeljen. Ne vem popolnoma, ali bi izbral odgovor A ali C, vendar vseeno **izberem odgovor A**, ker vsled kasnejšega oddajanja naloge nimam več *prava glasanja*, ki bi mi omogočilo oddajanje polovičnih glasov.

## 3 Zaključek

Ta dokument je informativne narave in se lahko še spreminja. Najnovejša različica, torej PDFji in L<sup>A</sup>T<sub>E</sub>X izvorna koda, zgodovina sprememb in prejšnje različice, je na voljo v mojem šolskem Git repozitoriju na <https://git.sijanec.eu/sijanec/sola-gimb-2> v mapi /mat/domace\_naloge/16/. Povezava za ogled zadnje različice tega dokumenta v PDF obliki je [http://razor.arnes.si/~asija3/files/sola/gimb/2/mat/domace\\_naloge/16/dokument.pdf](http://razor.arnes.si/~asija3/files/sola/gimb/2/mat/domace_naloge/16/dokument.pdf) in/ali [https://git.sijanec.eu/sijanec/sola-gimb-2/raw/branch/master/mat/domace\\_naloge/16/dokument.pdf](https://git.sijanec.eu/sijanec/sola-gimb-2/raw/branch/master/mat/domace_naloge/16/dokument.pdf).

## Razhroščevalne informacije

Te informacije so generirane, ker je omogočeno razhroščevanje. Pred objavo dokumenta izklopite razhroščevanje. To naredite tako, da nastavite ukaz *razhroscevanje* na 0 v začetku dokumenta.

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