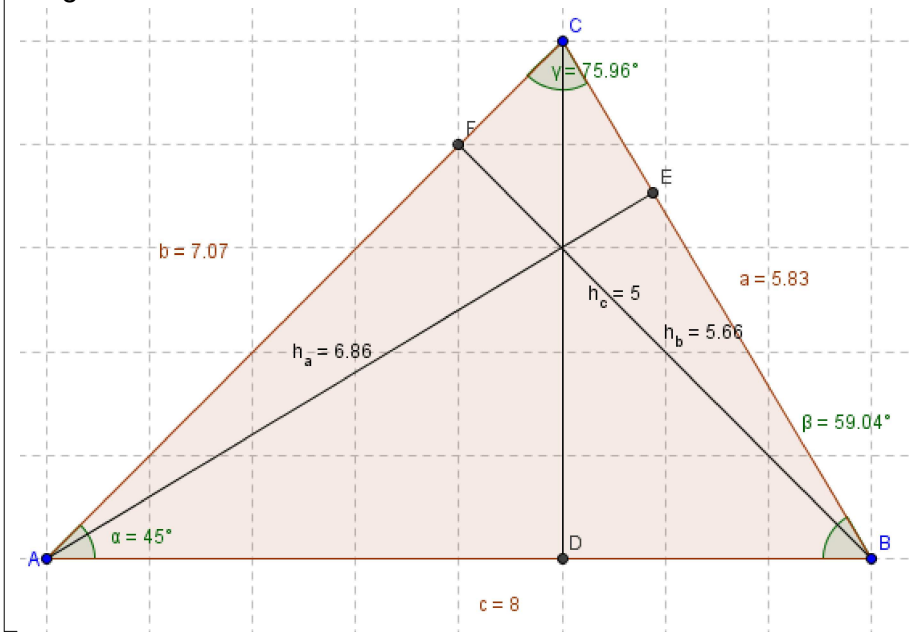
Cosinussatz

Dokumentnummer: DX1320
Fachgebiet: Trigonometrie, allgemeines Dreieck, Geometrie
Einsatz: 3HAK (zweites Lernjahr)

1 Berechnung eines Winkels, wenn drei Seiten eines Dreiecks gegeben sind

Figure 1:



2 Lösung

```
 -->  kill(all);
(%o0) done
```

```
 -->  a:5.83;b:7.07;c:8;
(%o1) 5.83
(%o2) 7.07
(%o3) 8
```

Cosinussatz anwenden

```
 -->  g:c**2=a**2+b**2-2*a*b*cos(gamma);
(%o4) 64=83.97380000000001-82.4362 cos(gamma)
```

```
(%i4) l:solve(g,gamma),numer;
rat: replaced -19.9738 by -95295/4771 = -19.9738000419199
rat: replaced 82.4362 by 118873/1442 = 82.43619972260748
rat: replaced -19.9738000419199 by -90721/4542 = -19.9738000880669
rat: replaced 82.43619972260748 by 91092/1105 = 82.43619909502263
rat: replaced 1.9924644992637844E-7 by 1/5018910 = 1.9924644992637844E-7
solve: using arc-trig functions to get a solution.
Some solutions will be lost.
rat: replaced 1.326066671485525 by 4258/3211 = 1.326066645904703
rat: replaced 1.326066645904703 by 4258/3211 = 1.326066645904703
rat: replaced -3.114294612270321E-4 by -1/3211 = -3.114294612270321E-4
rat: replaced -1.3260666459047 by -4258/3211 = -1.3260666459047
(%o5) [gamma=1.326066645904703]

(%i6) gamma:ev(gamma,l);
(%o6) 1.326066645904703

(%i7) gamma:gamma*180/%pi,numer;
(%o7) 75.97802216340845

(%i8) Weiter rechnen kann man mit dem Sinussatz
```