ME 1020 Engineering Programming with MATLAB

Problem 1.26:

26. The four-sided figure shown in Figure P26 consists of two triangles having a common side a. The law of cosines for the top triangle states that

$$a^2 = b_1^2 + c_1^2 - 2b_1c_1 \cos A_1$$

and a similar equation can be written for the bottom triangle. Develop a procedure for computing the length of side c_2 if you are given the lengths of sides b_1, b_2, and c_1 and the angles A_1 and A_2 in degrees. Write a script file to implement this procedure. Test your script, using the following values: $b_1 = 180$ m, $b_2 = 165$ m, $c_1 = 115$ m, $A_1 = 120°$, and $A_2 = 100°$.

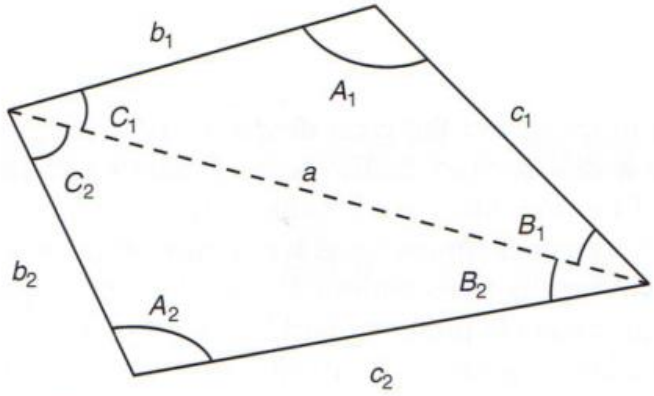

Figure P26

```
%Prob. 1-26
disp('Problem 1.26: Scott Thomas')

b1=180 %m
b2=165 %m
c1=115 %m
A1=120 %degrees
A2=100 %degrees
roots([1,-2*b2*cosd(A2),b2^2-b1^2-c1^2+2*b1*c1*cosd(A1)])
```

Problem 1.26: Scott Thomas

b1 =

180

b2 =

165

```
c1 =

   115


A1 =

   120


A2 =

   100


ans =

 -228.4542
  171.1503
```