Python – Law of Cosines

Purpose

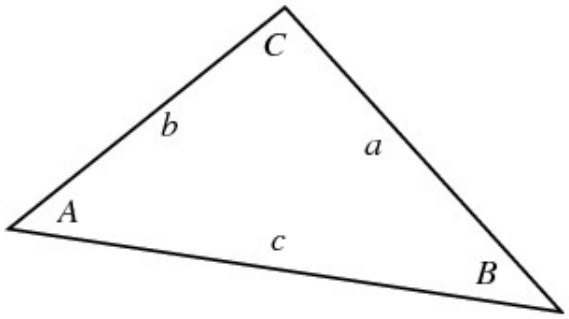
This lab was designed to reinforce the idea of decomposition by processing data via functions and outputting the result.

Description

Calculate the missing side length (rounded) and the area of a triangle given the values for any two sides of a triangle and the included angle. Round the area to 5 decimal places and assume all data are integers. sin and cos both take radians so convert from degrees to radians first.

area = ½ ab sin C

$c^2 = a^2 + b^2$ -2ab cos C




```
def area(a, b, C):
    """ returns the area of a triangle given two sides and an included angle"""
    # add your code here
def side_c(a, b, C):
    """ returns the third side length given two sides and an included angle"""
    # add your code here
```

Program Shell

Create a file called law_of_cosines.py

Sample Execution

```
Enter side a :: 3
Enter side b :: 3
Enter angle C in degrees :: 60

3 3 3
Area == 3.89711

Enter side a :: 7
Enter side b :: 8
Enter angle C in degrees :: 113

7 8 13
Area == 25.77414

Enter side a :: 10
Enter side b :: 10
Enter angle C in degrees :: 90

10 10 14
Area == 50.0
```