MAT 116E Advanced Scientific and Engineering Computing

Lab-1
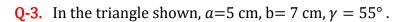
Q-1. Use MATLAB to evaluate the following expressions.

a) $\sqrt{2 + \sqrt{2}}$ b) 2^{3^2}
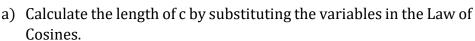
c) Find the cube root of the product of 2.3 and 4.5

d) $(0.0000123 + 5.678 \times 10^{-3}) \times 0.46567 \times 10^{-4}$

e) Define x and y as x=5.1 and y=4.2, then evaluate $(xy)^2 - \dfrac{x+y}{(x-y)^2} + \sqrt{\dfrac{x+y}{2x-y}}$

Q-2. Water freezes at 32° and boils at 212° on the Fahrenheit scale. If C and F are Celcius and Fahrenheit temperatures, the formula F=9C/5+32, convert from Celcius to Fahrenheit. Use the MATLAB to convert a temperature 37°C to Fahrenheit.

Q-3. In the triangle shown, a=5 cm, b= 7 cm, $\gamma = 55°$.

Define a, b, γ as variables, and then:

a) Calculate the length of c by substituting the variables in the Law of Cosines.
   - Law of Cosines: $c^2 = a^2 + b^2 - 2abcos\gamma$

b) Calculate the angles α and β (in degrees) using the Law of Sines.