MAT 116E Advanced Scientific and Engineering Computing

Lab-1 / CRN : 12852

Instructor: Assoc. Prof. Dr. Burcu Tunga Lab Assistant: Res. Asst. Ahmet Topal

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1 Question 1

Use MATLAB to evaluate the following expressions.

a) $\sqrt{2+\sqrt[4]{\pi}}$ **b)** $\dfrac{1-\frac{2}{5+3}}{1+\frac{2}{5-3}}$

c) $\sqrt[3]{\sqrt{132}}+\dfrac{ln(200.4)}{45}+\sin(36°)+e^{\cos(\pi)}$

d) Define the variables x and y as $x = 5.1$ and $y = 4.2$, then evaluate $(xy)^2 - \dfrac{x-y}{(x+y)^2} + \left(\dfrac{x+y}{2x-y}\right)^{\frac{1}{3}}$

2 Question 2

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.

$$\text{Law of Cosines} : c^2 = a^2 + b^2 - 2ab\cos\gamma$$

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

$$\text{Law of Sines} : \frac{a}{\sin\alpha} = \frac{b}{\sin\beta} = \frac{c}{\sin\gamma}$$

c.) Test whether or not the sum of angles is 180°.

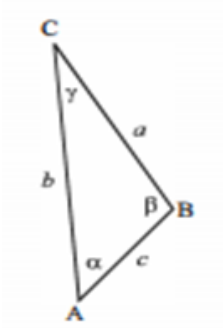

Figure 1: Representation of the triangle