Assignment Sheet 2

Assignment 5    Characteristic Function

What is the characteristic function of the set \( E = \{ x \mid x \neq x \} \)?

Assignment 6    Linguistic Terms

Assume you were told that the room temperature is around 20\( ^\circ \)C. How would you represent this piece of information by

a) a set and
b) a fuzzy set?

Assignment 7    Linguistic Terms

The middle point of a line segment is, at the same time, close to and far from its extreme points. How would you geometrically depict this idea through

a) sets and
b) fuzzy sets?

Assignment 8    Membership Function

Given the fuzzy set \( \mu \) with the following membership function

\[
\mu(x) = \begin{cases} 
    x - 5, & \text{if } 5 \leq x \leq 6 \\
    7 - x, & \text{if } 6 \leq x \leq 7 \\
    0, & \text{otherwise.}
\end{cases}
\]

a) Sketch the graph of the function.
b) What are the possible semantics of this fuzzy set?