Problem 2
Assumptions and Requirements

Shagun Shagun, ID - 40138455

1   Assumptions

- In function $f(x) = ab^x$, the output will always be in decimals.

- The output of the function will be greater than zero, if a and b constants are not equal to zero.

- The range for the values of x can be from -100000 $\leq$ x $\leq$ +100000.

- x can be negative but not in decimal.

- The value for a and b ranging from -100000 $\leq$ a $\leq$ 100000 and -100000 $\leq$ b $\leq$ 100000.

- a and b are constants, the calculator accepts the magical constants such as e.

2   Requirements

1. **First Requirement**

   - **ID =** FR1
   - **Type =** Functional Requirements
   - **Version =** 1.0
   - **Difficulty =** Easy
   - **Priority =** 1
   - **Description =** System shall take an input x as a real number.
   - **Rationale =** The rationale behind this requirement is to calculate the function only for real numbers.

2. **Second Requirements**

   - **ID =** FR2
   - **Type =** Functional Requirements
   - **Version =** 1.0
   - **Difficulty =** Easy
   - **Priority =** 1

- **Description =** System should validate the input.
- **Rationale =** The rationale behind this requirement is to check domain value for function.

3. **Third Requirement**

   - **ID =** FR3
   - **Type =** Functional Requirements
   - **Version =** 1.0
   - **Difficulty =** Easy
   - **Priority =** 3
   - **Description =** System shall output the value within the expected range.
   - **Rationale =** The rationale behind this requirement is to get result in the range of the function.

4. **Fourth Requirement**

   - **ID =** FR4
   - **Type =** Functional Requirements
   - **Version =** 1.0
   - **Difficulty =** Easy
   - **Priority =** 2
   - **Description =** System shall give a input the value of x within given range.
   - **Rationale =** The rationale behind this requirement is to get rational output of a function each time.

5. **Fifth Requirement**

   - **ID =** FR5
   - **Type =** Functional Requirements
   - **Version =** 1.0
   - **Difficulty =** Easy
   - **Priority =** 1
   - **Description =** System shall show relevant error messages if any.
   - **Rationale =** The rationale behind this requirement is to handle error handling.

6. **Sixth Requirement**

   - **ID =** FR6
   - **Type =** Functional Requirements
   - **Version =** 1.0
   - **Difficulty =** Medium

- **Priority** = 1
- **Description** = System shall accepts magical constant e as constant.
- **Rationale** =   The rationale behind this requirement is the acceptability of the constants.

7. **Seventh Requirement**

  - **ID** = FR7
  - **Type** = Non-Functional Requirements
  - **Version** = 1.0
  - **Difficulty** = Easy
  - **Priority** = 1
  - **Description** = System shall show relevant success messages or confirmation results.
  - **Rationale** =   The rationale behind this requirement is to show relevant messages and contributes to usability.

8. **Eighth Requirement**

  - **ID** = FR8
  - **Type** = Non-Functional Requirements
  - **Version** = 1.0
  - **Difficulty** = Easy
  - **Priority** = 2
  - **Description** = System shall complete the calculation on expected time.
  - **Rationale** = The rationale behind this requirement is to have good performance of the calculator.