Problem 2

The assumptions and requirements for the function

$$x^y$$

as per ISO/IEC/IEEE 29148 standards.

2.1 Assumptions

- Assumption 1
  - ID: ASSUMP1
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 1
  - Difficulty: Easy
  - DESC: fractional inputs are entered as double values
  - Rationale: when input base or exponent value equals 2/3, it must be expressed as 0.67
- Assumption 2
  - ID: ASSUMP2
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 1
  - Difficulty: medium
  - DESC: The output of larger values of exponent and base are expressed in terms of exponents
  - Rationale: when input is 100 raised to 100, the output is expressed as 1.9047931533522278E25
- Assumption 3
  - ID: ASSUMP3
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 2

  - Difficulty: High
  - DESC: Users enter whole numbers and rational numbers
  - Rationale: Irrational numbers are not handled by the code.For Example: π, $\sqrt{2}$

- Assumption 4
  - ID: ASSUMP4
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 3
  - Difficulty: Easy
  - DESC: Mathematical symbols such as infinity, indeterminate are represented in words
  - Rationale: Symbols such ∞ are represented in words - infinity

2.2 Functional Requirements

- Requirement 1
  - ID: FUNR1
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 1
  - Difficulty: Easy
  - DESC: The arguments passed to the function x power y shall be valued within $-\propto to+\propto$ and fractions are expressed as double values.
  - Rationale:when $x = 2.2$, $y = 4.45$ where x expressed in radians.

- Requirement 2
  - ID: FUNR2
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 2
  - Difficulty: Easy

  - DESC: The function shall return the value 1 when any base value is raised to the power zero
  - Rationale: 10 raised to the power 0 returns 1

- Requirement 3
  - ID: FUNR3
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 2
  - Difficulty: Easy
  - DESC: The function shall return zero when base value zero is raised to any exponent value
  - Rationale: 0 raised to the power 10 returns 0

- Requirement 4
  - ID: FUNR4
  - Version: 1.0
  - Type: functional
  - Owner: Pavit Srivatsan
  - PRIORITY: 2
  - Difficulty: Medium
  - DESC: The function shall accept only numerical values as specified in the domain
  - Rationale: string values, numbers with special characters, special characters are not allowed as inputs and an appropriate error message is displayed