Problem 1

Course - SOEN 6011, Professor - Pankaj Kamthan

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1 Function 9 : Power Function

1.1 Description

A power function is of the form:

$$f(x) = x^y \tag{1}$$

where y is a real number.

1.2 Domain

1. When y is a non-negative integer, the domain is all real numbers: (- ∞,∞)
2. When y is a negative integer, the domain is all real numbers excluding zero ((- ∞, 0) $\cup$ (0,∞))
3. When y is a irrational number and y $>$ 0, the domain is all non-negative real numbers.
4. When y is a irrational number and y $<$ 0, the domain is all positive real numbers.

1.3 Characteristics of Power Function.

1. The behaviour of power function depends on whether the y is a positive or a negative number.
2. The behaviour of power function depends on whether the y is even or odd.
3. Also, the power function behaves differently for fractional powers and specifically for negative or positive fractional powers.

References

[1] *"Power Functions Algebraic Representation"* `http://wmueller.com/precalculus/families/1\textunderscore41.html`

[2] *"Power Functions"* `http://www.biology.arizona.edu/biomath/tutorials/Power/Powerbasics.html`

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