Problem 1

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1 Function 5 : Power Function

1.1 Description

A power function is of the form:

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

where x is a real number, a and b are constants.

1.2 Domain

The domain is set of all real numbers, (- ∞,∞)

1.3 Co-domain

The co-domain is also set of all real numbers.

1.4 Characteristics of Power Function.

1. For any exponential function, the domain is the set of all real number, however range is bounded by the horizontal symptote of the graph of f(x).
2. The behaviour of power function effects the exponential growth and decay.
3. When b greater than 1, the graph accelerates towards y-axis contributing to exponential growth.
4. When b greater than 1 and less than 0, the graph decreases towards y-axis contributing to exponential decay.
5. When modeling real-world situations with an exponential function, the domain and range can be limited to numbers that make sense in the context. The domain and range can be stated using the inequalities for a continuous interval in these cases.