**Practice Question 1: Function Concepts**

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| --- | --- | --- | --- | --- | --- |
|  | 1 | 3 | 9 | 27 | 81 |
|  | 0 | 4 | 8 | 12 | 16 |

1. Selected values of a function are given in the table above. It is known that is an increasing function defined for . The function is given by .  
   .

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| (A) | (i) | The function is defined by . Find the value of as a decimal approximation or indicate that it is not defined. |
| (ii) | Find the value of or state that it is not defined. |
| (B) | (i) | Find all values of , as decimal approximations, for which , or indicate that there are no such values. |
| (ii) | Determine the end behavior of as increases without bound. Use limit notation in your answer. |
| (C) | (i) | Use the table of values for to determine if is best modeled by a linear, quadratic, cubic, exponential, or logarithmic function. |
| (ii) | Give a reason for your answer based on the relationship between the change in the output values of and the change in the input values of . |