

AI-DS Nexus | Q0.3. Functions

📘 Understanding Mathematical Functions – A Conceptual Dive

🧠 Explore key function types and their roles in modeling behavior

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1. What does it mean to consider a function as a "black box"?

20 points

- A. It stores past outputs for future predictions
- B. It hides internal processing and maps inputs to outputs
- C. It runs in the background like a computer program
- D. It encrypts data before producing results



2. Which of the following is not a standard trigonometric function?

15 points

- A. Sine (sin) 
- B. Tangent (tan) 
- C. Cosine (cos) 
- D. Exponent (exp) 

3. Which graph shape best represents a quadratic function?

15 points

- A. A straight line 
- B. A bell curve 
- C. A parabola (U-shape) 
- D. A staircase shape 

4. Where are sigmoid functions commonly applied?

18 points

- A. Modeling daily temperature cycles 
- B. Switching behavior in neural networks 
- C. Representing circular motion 
- D. Calculating compound interest 

5. What key characteristic defines exponential growth?

16 points

- A. Proportional to current value 
- B. Linearly increasing steps 
- C. Constant rate of change 
- D. Sudden spikes then flat lines 



6. What is the inverse of an exponential function?

16 points

- A. Polynomial function 
- B. Sigmoid function 
- C. Logarithmic function 
- D. Rational function 

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