

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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