

Multiple-Choice Test

Chapter 05.01 Background on Interpolation

1. The number of polynomials that can go through two fixed data points (x_1, y_1) and (x_2, y_2) is
 - (A) 0
 - (B) 1
 - (C) 2
 - (D) infinite
2. A unique polynomial of degree _____ passes through $n + 1$ data points.
 - (A) $n + 1$
 - (B) $n + 1$ or less
 - (C) n
 - (D) n or less
3. The following function(s) can be used for interpolation:
 - (A) polynomial
 - (B) exponential
 - (C) trigonometric
 - (D) all of the above
4. Polynomials are the most commonly used functions for interpolation because they are easy to
 - (A) evaluate
 - (B) differentiate
 - (C) integrate
 - (D) evaluate, differentiate and integrate
5. Given $n + 1$ data points $(x_0, y_0), (x_1, y_1), \dots, (x_{n-1}, y_{n-1}), (x_n, y_n)$, assume you pass a function $f(x)$ through all the data points. If now the value of the function $f(x)$ is required to be found outside the range of the given x -data, the procedure is called
 - (A) extrapolation
 - (B) interpolation
 - (C) guessing
 - (D) regression

6. Given three data points (1,6), (3,28), and (10, 231), it is found that the function $y = 2x^2 + 3x + 1$ passes through the three data points. Your estimate of y at $x = 2$ is most nearly
- (A) 6
 - (B) 15
 - (C) 17
 - (D) 28

For a complete solution, refer to the links at the end of the book.