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## Pop Quiz # 2

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5/5 points (ungraded)

Q#1: What is the problem of using Lagrange form?

☐ Nodes are function of  $x$

☐ Dynamic in terms of node selection

☒ Not dynamic in terms of node selection

☐ None of the above



Q#2: According to the Existence and Uniqueness Theorem, suppose there are two polynomials  $a_n(x)$  and  $b_n(x)$  of degree  $\leq n$  and  $c(x) = a(x) - b(x)$ . What can be the degree of  $c(x)$ ?

☐  $\geq n$ ☐  $n + 1$ ☒  $\leq n$ ☐ 0

Q#3:  $l_i(x_j) = \delta_{ij} = \begin{cases} 1 & \text{if } i = j \\ 0 & \text{if } i \neq j \end{cases}$ . What is the name of this relation?

☒ Orthogonal relation☐ Supplementary relation☐ Binary relation☐ None of the above

Q#4: The following nodes ( $x_0 = 1, x_1 = 1, x_2 = 2$ ) are given. If we try to find the coefficients using the Vandermonde matrix



by inverting the matrix  $V$ . Will we be able to invert the matrix  $V$  ?

☒ No, the inverse of  $V$  doesn't exist because the nodes are not distinct .

☐ Yes, we will be able to invert the matrix  $V$  because it is invertible.

☐ Depends on the size of the matrix  $V$ .



Q#5: If we are given 4 nodes, what should be the degree of the polynomial that is used to find the value of the coefficients using the Vandermonde matrix?

☐ 4

☐ 1

☒ 3

☐ 2



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