Math

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1 Introduction

1. Evaluate the differences
$\nabla^3[a_3x^3 + a_2x^2 + a_1x + a_0]$
$a.a_3 3h^2$
$b.a_3 3!h^2 correctanswer$
$c.3!h^2$
$d.a_3h^2$

2. If mu is the mean operator, $\text{mu}^2 =$
$a.1 + \frac{\delta^2}{2}$
$b.1 + \frac{\delta^2}{4} correctanswer$
$c.1 + \frac{\delta^2}{5}$
$d.1 + \frac{\delta}{4}$

3. if $\text{f(x)} = \text{x}^3$
$findthevalueof f[a, b, c]$
$a.ac$
$b.ab$
$c.a + b + ccorrectanswer$
$d.abc$

4. if $\text{f(x)} = \text{x}^n then f[x_0, ..., x_n]$
$a. - 1$
$b.1 correctanswer$
$c. - 2$
$d.0$

5. If $\text{f}(x) = x^k, k$
$a.0 correctanswer$
$b. - 2$
$c.1$

$d. -1$

6. If $\mathrm{P}_n(x)\, is a polynomial of degree n with leading coefficient an, and x0 is an arbitrary point, then \Delta^{n+1} P_{n+1}(x_0) =$
$a.2$
$b.1$
$c.3$
$d.0 correct answer$

7. if mu is the mean operator and $\delta is the central difference then \mu\delta =$
$a.\frac{1}{3}(\Delta+\nabla)$
$b.\frac{1}{4}(\Delta+\nabla)$
$c.\frac{1}{2}(\Delta+\nabla)\, correct answer$
$d.\frac{2}{3}(\Delta+\nabla)$

8. if a=$\begin{bmatrix} 1 & 2 & 6 \\ 2 & 4 & 1 \\ 7 & 3 & 2 \end{bmatrix}$ $find \det(A)$
$a.13$
$b. -121 correct answer$
$c. -13$
$d.12)$

9. $\sum_{i=0}^{n} L_i(x)\, x_i^k =$
$a.x$
$b.x^k correct answers$
$c.x^{1-k}$
$d.x^{k-1}$

10. $\sum_{i=0}^{n} (L_i(x)) =$
$a.2$
$b.3$
$c.0$
$d.1 correct answer$