Assignment 3

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2020-02-19, 23:59 IST.

1) Extending the idea of computing partial derivatives, what is the size of circuit computing second-order partial derivatives?
   - $O(s)$
   - $O(sn)$
   - $O(s^2n^2)$
   - $O(s^2n)$

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   $O(sn)$

2) Let $f$ and $g$ be two polynomials in VNP. Which of the following is true?
   - Both $f+g$ and $fg$ are in VNP.
   - $f+g$ is in VNP but $fg$ is not.
   - $fg$ is in VNP but $f+g$ is not.
   - None of $f+g$ and $fg$ is in VNP.

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   Both $f+g$ and $fg$ are in VNP

3) Suppose there is an ABP of size $s$ computing polynomial $f$.
   What will be the size of ABP computing degree-$d$ homogeneous part of $f$?
   - $O(sd)$
   - $O(sd^2)$
   - $O(s^2d)$
   - Homogenization of ABP not possible.

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   $O(sd)$

4) Given a $4 \times 4$ Vandermonde matrix $A$ such that its $(i,j)^{th}$ element is $i^j - 1$.
   What will be the value of $\frac{\det(A)}{32!}$, where $\det(A)$ is determinant of matrix $A$?
   - $4!$
   - $1!$
   - $3!/2! 1!$
   - $1/(3! 2! 1!)$

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   $4!$

5) Let $f(x_1, \ldots, x_n) = x_1 \ldots x_n$ over $F_2$. Then how many monomials does $f(x_1 + 1, \ldots, x_n + 1)$ have?
   - $n$
   - $n^n$
   - $2^n$
   - $n!$

   No, the answer is incorrect.
   Score: 0
   Accepted Answers:
   $2^n$