Analysis H 2022-2023 – Hahn / Hlasek / Tantod _____ is growing in math. That's a fact. Orial.
AtPS Quiz 2 Period: _____
NO CALCULATORS

_____
28 pts

1. Write each as a compact expression. No need to evaluate the actual number – you can just write an equivalent numerical expression. [3 pts each]

a) $\sum_{n=43}^{200} F_{2n}$

b) $\sum_{n=1}^{75} [5 + 7(n-1)]$

2. Evaluate (your answer for this problem should be a single number). [3 pts]

$$\sum_{n=6}^{10} 512\left(\frac{1}{2}\right)^n$$

3. Simplify completely: $\binom{3n+2}{3n-1} \cdot (3!)$ Write your answer as a polynomial with integer coefficients. [3 pts]

4. Evaluate (give your answer as a single number): [2 pts each]

a) $\binom{-2}{500}$ b) $\binom{6}{20}$ c) $\binom{-8}{4}$

5. Prove by mathematical induction: $1 + 3 + 5 + 7 + \cdots + (2n - 1) = n^2$ for all positive integers *n*. [5 pts]

6. Prove by mathematical induction: $2 \cdot 4^n + 3 \cdot 9^n$ is a multiple of 5 for all positive integers *n*. [5 pts]