Analysis H – Hahn / Tantod
Unit 1: AtPS, Quiz 2
NO CALCULATORS

I choose you: _____
Period: _____

1. Use mathematical induction to prove that the given formula works for all positive integers n. [6 points]

$$1^3 + 2^3 + 3^3 + \cdots + n^3 = \frac{n^2(n+1)^2}{4}$$

2. Use mathematical induction to prove that $n^3 - n$ is divisible by 6 for all $n \geq 2$. [6 points]

3. Simplify: [4 points]

$$\frac{(2n+2)!\,(n!)^2}{[(n+1)!]^2(2n)!}$$

4. Evaluate: [2 points each]

a) $\binom{-2}{10}$

b) $\binom{-4}{3}$