QUIZ 3: **NAME:**_____

1) (4pts) Given that $a_1 = a_2 = a_3 = 1$ and that $a_n = a_{n-1} + a_{n-2} + 3a_{n-3}$.

a) How many base case are required for a proof by induction?

b) How many previous cases are assumed in the induction hypothesis?

2) (3pts) State the Well Ordering Principle.

3) (2pts) Explain the difference between the Principle of Induction and the Strong Induction Principle.

4) (6pts) Prove $\sum_{i-1}^{n} i^2 = \frac{n(n+1)(n+2)}{6}$ for all $n \in \mathbb{N}$ by induction.