Quiz 4

True/False - No explanation needed. (2pts)

- 1. Mathematical induction can't be used to prove statements without any explicit mathematical equations. True/False
- 2. When calculating the probability P(A) for some event $A \subseteq \Omega$ on an "equally likely" finite probability space (Ω, P) , we can simply count the number of outcomes of A (the good possibilities) and divide that by all outcomes in Ω (all possibilities). True/False

Problems - Need justification. No justification means zero!

1. What is the probability that when you roll a fair die 8 times, you never get a multiple of 3? (5pts)

2. Let $\{a_n\}_{n\geq 1}$ be a sequence defined by $a_1 = 1, a_2 = 4$ and $a_{n+2} = 2a_{n+1} - a_n + 2$. Prove that $a_n = n^2$ for all $n \geq 1$, by using mathematical induction. (5pts)