Math 10B with Professor Stankova
Quiz 4; Tuesday, 2/13/2018
Section #211; Time: 11 AM
GSI name: Roy Zhao **Name:** _____

Circle True or False or leave blank. (1 point for correct answer, -1 for incorrect answer, 0 if left blank)

1. True False If we want to show that the statements S_n are true for all $n \geq 0$, we need to prove the base case $n = 1$.

2. True False When $A \subset B$, the conditional probability $P(A|B)$ can be expressed as the fraction $\frac{P(A)}{P(B)}$ (given all involved quantities are well-defined).

Show your work and justify your answers. Please circle or box your final answer.

3. (10 points) (a) (4 points) Prove that $1 + 2 + \cdots + n = \frac{n(n+1)}{2}$ for all $n \geq 1$.

(b) (3 points) What is the probability that when picking a hand of 5 cards out of a deck of 52 cards, you pick at least one king?

(c) (3 points) What is the probability that when picking a hand of 5 cards out of a deck of 52 cards, you pick exactly three kings given that you have at least one king?