

Math 10B with Professor Stankova

Quiz 4; Tuesday, 2/19/2019

Section #206; Time: 9:30 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 If we use induction to prove a solution to $a_n = n^2 a_{n-1} - a_{n-2} - a_{n-3}^2$, then we will need to use S_n, S_{n-1} , and S_{n-2} to prove S_{n+1} .

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

3. (10 points) (a) (7 points) Prove that $1 - 2 + \dots + (-2)^n = \frac{1 - (-2)^{n+1}}{3}$ for all $n \geq 0$.

- (b) (3 points) What is the probability that when picking a hand of 5 cards out of a deck of 52 cards, you don't have any pairs (or triples/four of a kind)?