

Quiz 3

Student ID Number:

Name _____

Math 175, 12PM

Please justify all your answers

January 30, 2020

Please also write your full name on the back

1. True or false?
 - (a) Any collection of three or more integers must contain two integers of the same parity.
 - (b) For any fixed n , the sequence of binomial coefficients $\binom{n}{k}$ is monotonically increasing in k .
2. Prove that in any group of 800 people at least three must share a birthday.
3. Prove that for any prime p and any integer $0 \leq k \leq p$, the binomial coefficient $\binom{p}{k}$ is divisible by p .