

## Math 201 - Homework 2

**Exercise 1.** May and Jonny are playing paintball in opposite teams and they try to shoot each other simultaneously.

- The probability that both May and Jonny hit the target in a single shot is  $1/8$ .
- The probability that May hits the target but Jonny misses the target is  $3/8$ .
- The probability that May misses the target but Jonny hits the target is  $1/8$ .
- The probability that both May and Jonny miss the target is  $3/8$ .

The game ends when one of the two players hits the other. If the two players hit each other on the same time they both lose.

- (a) What is the probability that the battle will end on the  $n$ -th round (with the  $n$ -th shot of May or Jonny) ?
- (b) What is the probability that May wins the game ?
- (c) What is the probability that Jonny wins the game ?

**Exercise 2.** The orange bus line arrives to the station every 15 minutes starting from 5pm. Fred arrives to the station in a time which is distributed uniformly between 5 to 5 : 45pm. Fred got out from a recitation and missed the 5pm bus. What is the probability that he will wait less than 5 min at the station ?