

Quiz 1, Math 149A F19

Problem 1: Prove the following. Let $(C_n)_n$ be an arbitrary sequence of events, then

$$P(\cup_{n=1}^{\infty} C_n) \leq \sum_{n=1}^{\infty} P(C_n).$$

Problem 2: Each of four persons fires one shot at a target. Let C_k denote the event that the target is hit by person k , $k = 1, 2, 3, 4$. If C_1, C_2, C_3, C_4 are independent and if $P(C_1) = P(C_2) = 0.7$, $P(C_3) = 0.9$ and $P(C_4) = 0.4$, compute the probability that

- (a) all of them hit the target;
- (b) exactly one hits the target;
- (c) no one hits the target;
- (d) at least one hits the target.