

Board Questions

First Session, Sep 19th

1 Discrete Distributions

X	1	3	5	7
$F(X \leq x)$.5	.75	.9	1

- a) What is $P(X \leq 3)$?
- b) What is $P(X = 3)$?

2 Expectations

- a) Would you accept a gamble that offers a 10% chance to win \$95 and a 90% chance of losing \$5?
- b) Would you pay \$5 to participate in a lottery that offers a 10% chance to win \$100 and a 90% chance to win nothing?

3 Memorylessness

Assume that $X \sim \text{Geometric}(p)$. Show that the geometric distribution is memoryless (or stationary), i.e. show that

$$P(X = n + k | X \geq n) = P(X = k)$$

where $n, k > 0$.

4 Variance

X	1	2	3	4	5
$P(X = x)$.1	.2	.4	.2	.1

- a) Compute the variance and standard deviation $\sigma(X)$ of X .
- b) What are the variance and standard deviation of $\frac{X}{\sigma(X)}$?