Question 2

During the rifle qualification in the Marine Corps the final ten shots are taken from 500 yards. You receive one point for a hit and zero for a miss. If each shot is independent and the probability you hit is $p = 0.70$, what is the probability that you hit 7 or more of your shots?

Solution

Let $X \sim \text{Binomial}(n = 10, p = 0.70)$. We want

$$\mathbb{P}(X \geq 7) = \sum_{k=7}^{10} \binom{10}{k} (0.70)^k (0.30)^{10-k} \approx 0.650$$

Answer

$$\boxed{\mathbb{P}(X \geq 7) = \sum_{k=7}^{10} \binom{10}{k} (0.70)^k (0.30)^{10-k} \approx 0.650}$$