

Answer on Question #67862 – Math – Statistics and Probability

Question

Assume that on an average one telephone number out of 15 is busy. Which probability distribution can be used to find the probability that if 6 randomly selected telephone numbers are called, not more than three will be busy? Find the probability.

Solution

The binomial distribution with $p = \frac{1}{15}$, $n = 6$:

$$P(X = k) = C_n^k p^k (1 - p)^{n-k}.$$

Then

$$P(X \leq 3) = P(X = 0) + P(X = 1) + P(X = 2) + P(X = 3) = 0.9997.$$