

Question 10.13.3.31

An integer is chosen between 0 and 100. what is the probability that it is

(a) divisible by 7 (b) not divisible by 7

Solution: Let n be a number between 0 and 100;
 X be a random variable such that

$$X = \begin{cases} 0 & n \not\equiv 0 \pmod{7} \\ 1 & n \equiv 0 \pmod{7} \end{cases} \quad (1)$$

Hence,

$$p_X(1) = \frac{14}{99} \quad (2)$$

$$p_X(0) = 1 - p_X(1) \quad (3)$$

$$= \frac{85}{99} \quad (4)$$