Assignment 6

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LaTeX

Outline

1. Class 12 Solutions

Problem

Example 30

Six balls are drawn successively from an urn containing 7 red and 9 black balls.Tell whether or not the trials of drawing ball are Bernoulli trials when after each draw the ball drawn is

1. replaced
2. not replaced in the urn

Solution

Solution:

1. The number of trials is finite. When the drawing is done with replacement, the probability of success (say, red ball) is $p = \frac{7}{16}$ which is same for all six trials. Hence, the drawing of balls with replacements are Bernoulli trials.

2. When the drawing is done without replacement, the probability of success in first trial is $\frac{7}{16}$, in 2nd trial is $\frac{6}{15}$ if the first ball drawn is red or $\frac{7}{15}$ if the first ball drawn is black and so on. Clearly, the probability of success is not same for all trials, hence the trials are not Bernoulli trials.

Code

```python
import random
r = 7 # r is the number of red balls in the urn
b = 9 # b is the number of black balls in the urn
P_replacement = r/(r+b)
print(P_replacement)
x = random.randint(0,1)
if(x == 0):
    P_without_replacement = r-1/(r+b-1)
else:
    P_without_replacement = r/(r+b-1)
print(P_without_replacement)
```