Prove that

Firstly, we get an intuition that this is a binomial distribution

Recall that for binomial and that expected value and the . So we see that the left-hand side is the sum of PMF (MISSING A TRANSITION TO EXPECTATION)

So

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Describe how 𝑓(𝑛,𝑝)f(n,p) can be computed using a process that requires a constant number of multiplications and additions, regardless of n. Use your process to compute the values of 𝑓(𝑛=10000,𝑝=0.05,0.1,0.2,0.3)f(n=10000,p=0.05,0.1,0.2,0.3) in O(1).  
Explain all your steps.

From question 2.1 we saw that the above equals , which can also be expressed by .

So we can solve this by