## Stochastics

9'th homework (Deadline: Nov 30. 12:15), maximum score: 1 point
Let $X_{1}, X_{2} \ldots X_{7}$ be identically distributed independent random variables. We know that their common distribution is optimistic geometric, however, we do not know the success probability $p$. We observe that $X_{1}=3, X_{2}=2, X_{3}=2, X_{4}=2, X_{5}=4, X_{6}=1, X_{7}=5$.
(a) Depending on the parameter $p$, express the following probability: $L(p)=\mathrm{P}\left(X_{1}=3, X_{2}=2, X_{3}=\right.$ $2, X_{4}=2, X_{5}=4, X_{6}=1, X_{7}=5$ )
(b) Take the logarithm of the expression you have received in part (a), i.e., consider $l(p)=\ln L(p)$ and via derivation with respect to $p$, determine the $p$ for which $l(p)$ is maximal (of course, $L(p)$ is also maximal here)!

