Probability: Homework 2

Nick Williams

September 17, 2018

Problem 1:

(1): By definition, a probability mass function must satisify $\sum^t f(t) = 1$, if $x \in \{0, 1, 2\}$

$$\begin{aligned}
\text{then } \sum_{i=0}^{2} \frac{k}{2^x} &= 1 \\
\frac{k}{2^0} + \frac{k}{2^1} + \frac{k}{2^2} &= 1 \\
\frac{k}{1} + \frac{k}{2} + \frac{k}{4} &= 1 \\
\frac{4k}{4} + \frac{2k}{4} + \frac{k}{4} &= 1 \\
\frac{7}{4}k &= 1 \\
k &= 0.5714
\end{aligned}$$