6.1 Problems from the Text

Do book problems 10.1, 10.2, 10.6, 10.14.

6.2 Additional Problems

Problem 1: In the rate distortion setting, we have function $R(D)$ which is the smallest compression rate of encoding source $X$ with distortion $D$.

1a. Give an example where $R(0) = H(X)$. You must give a description of the source, source alphabet, and distortion measure, and compute the resulting rate.

1b. Give an example where strictly $R(0) < H(X)$. You must give a description of the source, source alphabet, and distortion measure, and compute the resulting rate.

1c. Give an example where strictly $R(0) > H(X)$. You must give a description of the source, source alphabet, and distortion measure, and compute the resulting rate.