1. Calculate the shannon entropy of a uniform distribution of unit variance, and compare to that of a Gaussian.

2. Consider a source of 0’s and 1’s, that emits strings that always have blocks of 3 or 5 central bits, from a change:

```
00000 || 000 || 000 || 00 || 00 || 00 || 00 || 00 || 000 || 000 || 000 || 000 || 000 || 000 || 000
```

What is the entropy per 10 symbol?

3. What is the shannon entropy per symbol if the AR process

\[ Y_n = \sum_{k=1} \gamma_n \cdot k \cdot X_k + X_k, \]

where \( \gamma_n^2 \leq 1? \)