QINTRO - TD7

Ex 7.

2 discrete probas.

$$P = (P_1, \dots, P_n)$$
$$Q = (Q_1, \dots, Q_n)$$

$$H(r) = -\sum_{i \geq 0} r_i \log_2(r_i)$$

$$= -\sum_{i,j} P_i Q_j \log_2(P_i Q_j)$$

$$= -\sum_{i,j} P_i Q_j \left(\log_2 P_i + \log_2 Q_j\right)$$

$$= -\sum_{i,j} P_i (\log_2 P_i) - \sum_{i,j} P_i Q_j (\log Q_j)$$

$$-\sum_i P_i \sum_j Q_j (\log_2 P_i) - \sum_i P_i \sum_j Q_i (\log_2 Q_j)$$

$$= H(P) + H(Q)$$