Please solve the following problems.

1. Let \( C \) be a binary \([16, 8, 6]\) code with weight enumerator \( A(x, y) = x^{16} + 112x^{10}y^6 + 30x^8y^8 + 112x^6y^{10} + y^{16} \). Suppose that \( C \) is used on a \( BSC(p) \).
   (a) How many errors can \( C \) correct?
   (b) What is the probability of decoding failure for \( p = 0.005 \) if the code is used to correct 2 errors?

2. Let \( C \) be a \([10, 6]\) Reed-Solomon code over \( \mathbb{F}_{11} \).
   (a) Prove that 2 is a primitive element of \( \mathbb{F}_{11} \). Is it true that all of the elements 2, 3, 4, ..., 10 are primitive mod 11?
   (b) Using the powers of 2, write out a parity-check matrix \( H \) for \( C \). How many codewords does \( C \) contain?
   (c) Let \( r = (3, 0, 0, 10, 4, 0, 6, 10, 0) \) be a received vector. Decode the vector to codeword \( c \) and find \( f \) such that \( c = \text{eval}(f) \).